



Australian Government
National Water Commission



National Water Commission

The National Water Planning
Report Card 2013

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Chair

Senator the Hon Simon Birmingham
Parliamentary Secretary to the Minister for the Environment
Parliament House
CANBERRA ACT 2600

Dear Senator Birmingham

I am pleased to present to you the National Water Commission's *National Water Planning Report Card 2013*.

The 2013 report card is the second in the series initiated by the Council of Australian Government's Water Reform Committee in 2010. This second iteration of the report card presents a consolidated summary of the status of water planning as at 31 December 2013 with information on 174 planning areas across Australia.

The Commission's 2013 assessment shows that the development of newer water plans has benefited from lessons learned in previous planning cycles. New policy and legislation to improve the management of water interception have been introduced since the Commission's first assessment in 2011. Plans for water resources with higher levels of use are generally informed by scientific and socio-economic studies. Several jurisdictions have made progress towards legislative reform to streamline planning processes, although there remains unfinished business in this area.

Water planning coverage has continued to improve, with most jurisdictions now having more than 80 per cent of water use managed under water plans. However in some areas substantial water extraction still occurs outside the water planning process, thereby reducing the transparency of water allocation decisions. One obvious example is the risk to groundwater resources from rights to water for extractive industries.

The Commission's assessment has highlighted the weaknesses of existing monitoring and evaluation arrangements across jurisdictions. For the most part, water plans rely on generic state-wide monitoring of implementation, which takes inadequate account of the higher-level outcomes sought for specific water resources. As a result, attempts to evaluate the effectiveness and appropriateness of water plans have had limited success and the opportunities for on-going improvements remain substantially under-realised.

This will be the last water planning report card produced by the Commission. I would like to acknowledge the cooperation of all states and territories in the preparation of both the 2011 and 2013 assessments. The Commission recognises that jurisdictional input has been vital to inform these reports.

The National Water Commission urges continued commitment to implement robust and transparent water planning arrangements, as was agreed under the National Water Initiative. This is critical to provide certainty for all water users and build community confidence in water planning decisions. Such a commitment is all the more important in areas that are emerging as priorities for economic development, such as Northern Australia.

Yours sincerely

A handwritten signature in black ink, which appears to read "K. Maywald". The signature is written in a cursive, flowing style.

The Hon Karlene Maywald
30 June 2014

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1 Executive summary

This *National Water Planning Report Card 2013* follows the first baseline assessment undertaken in 2011. It provides a consolidated summary of the progress of water planning across Australia against an evaluation framework based on key elements of the National Water Initiative (NWI) and its associated Water Planning Guidelines.

Under Australia's constitutional arrangements, state and territory governments are largely responsible for water resource management and they develop water plans at varying scales. Water plans may combine multiple catchments or they may deal with a single surface or groundwater resource, depending on specific circumstances. Water plans seek to manage water resources sustainably, under changing pressures, to maintain the future viability of the resources and all consumptive and non-consumptive uses that depend on them.

This report does not compare state and territory water planning frameworks against each other nor does it advocate a particular water planning model. Rather, it seeks to facilitate a national discussion on the quality of water plans and planning frameworks, as well as identify areas of better practice and those for improvement. It should be noted that the report card is a desktop assessment. It focuses on the policy and legislative processes for water planning and does not examine on-ground implementation arrangements in detail.

National trends

Since 2011 progress towards better water planning arrangements has been steady in all jurisdictions. This trend towards improved, NWI-consistent water planning has some significant exceptions – posing a risk to the ongoing achievement of economic, social and environmental outcomes.

The findings summarised below and in Appendix One outline trends in water planning across Australia identified during this second report card assessment. The summary findings do not necessarily relate to all jurisdictions or all water plan areas but rather show the direction of water planning nationally. Notable exceptions to these trends are identified within the jurisdictional summaries and individual water plan assessments in the following chapters.

Increase in water planning coverage

Water planning coverage has improved significantly since 2011 – most jurisdictions now have more than 80 per cent of water use managed under water plans. In general, the development of newer water plans has benefited from lessons learned in previous planning cycles. In water resources subject to higher levels of competition, decisions are usually informed by detailed scientific and socio-economic studies that consider stakeholders' concerns from an early stage and reflect trade-offs between economic, social and environmental outcomes.

Several jurisdictions have also made progress towards legislative reform with the aim of streamlining water planning processes and reducing regulation. In some jurisdictions there are still significant delays in initiating or finalising planning arrangements and in undertaking scheduled reviews. More broadly, there is a lack of transparency about the process for prioritising water plan development where plans do not currently exist. All jurisdictions maintain that decision-making is underpinned by appropriate risk and prioritisation considerations, but these processes are rarely explicit or systematic. Implementation of robust and transparent water planning arrangements in areas that are emerging as critical for economic development, such as Northern Australia, will be required to ensure that resources are managed effectively.

Improvements in management of interception although exceptions remain

In the 2011 baseline report card assessment, the management of interception activities was criticised as being inconsistent. Since that time several jurisdictions have introduced new policy and have reformed legislation to improve the monitoring and management of some intercepting activities. For the most part, jurisdictions have adopted broad coverage of most potential intercepting activities by making all extraction subject to extraction limits, regardless of the type of use (e.g. mining, forestry, stock and domestic use). Yet important exceptions remain. An example is the risk to groundwater resources from rights to water for extractive industries that operate outside of water planning arrangements. Significant water use that occurs outside the water planning process reduces the transparency of water allocation decisions. As such, it has the potential to undermine confidence in water planning and reduce the security of existing water entitlements, including water for the environment.

Progress in identifying and securing environmental water requirements

The 2011 report card assessments highlighted that environmental water activities needed better coordination and accountability. In this regard, more recent water plans generally have clearer provisions for environmental water. Most commonly these provisions rely on planned environmental water (i.e. water that is reserved within systems for environmental purposes and not available for extraction), rather than on entitlements committed exclusively to meet environmental needs. The finalisation of the Murray–Darling Basin Plan has made clearer the sustainable levels of extraction inside the Murray–Darling Basin (MDB) and the intended timeframes for achieving reductions in water use where required. The MDB plan establishes sustainable diversion limits, which in some cases differ from the extraction limits established by Basin states' water plans.

Some plan areas, particularly those identified as overallocated within the MDB, have provisions for the holding and management of environmental water entitlements and associated environmental watering plans. The latter usually apply to surface water resources and include explicit commitments about the delivery of environmental water depending on local needs and conditions at different times. Although the NWI does not specify water quality as a fundamental characteristic of water that should be recognised in water planning, it is as important in water management as volume, location and timing. In this regard, water planning could be improved through greater recognition of the interactions between quality and quantity, particularly in relation to the achievement of environmental outcomes.

Inadequate monitoring and evaluation against plan outcomes

In the 2011 baseline report card assessment, the weaknesses of existing monitoring and evaluation (M&E) arrangements across all jurisdictions were highlighted. Although marginal improvements have been shown in some areas, the inadequacy of M&E for many water plans continues to result in lost opportunities and a lack of accountability that is likely to undermine ongoing business and community confidence.

At the operational level there are some examples of responses to lessons learned from previous experiences. These responses can be ad hoc and unreported, so they might not always be repeatable, transparent or sustained. In some cases, end-of-term reviews are contributing to re-formulation and clarification of outcomes, with newer water plans more likely to establish clearer objectives that are specific, measurable, realistic, achievable and time-bound. Yet these improvements do not appear to be accompanied by comparable improvements to monitoring arrangements. For the most part, plans rely on generic jurisdiction-wide monitoring of implementation activities that take little account of the higher-level outcomes sought for specific water resources. For this reason, attempts to evaluate the effectiveness and appropriateness of water plans have had limited success and the opportunities for ongoing improvements remain substantially under-realised.

Compliance is largely focused on extraction volumes, as opposed to the range of other rules that are included in plans and may be critical to water regime maintenance. The recent establishment and early progress of the National Framework for Compliance and Enforcement Systems for Water Resource Management is likely to contribute to improving the effectiveness of compliance efforts.

2 Introduction

Background

In Australia, water is vested in the state and territory governments. These jurisdictions are responsible for managing water resources to achieve the public and private benefits of water. The Australian Government's involvement in water reform has increased since 1994 as a result of the Council of Australian Governments (COAG) Water Reform Framework and development of the National Water Initiative (NWI).

The NWI addresses water management issues at a national level, reflecting the imperative for national compatibility and a strategic, coordinated approach to managing connected water systems. The NWI is a commitment by all state and territory governments and the Australian Government through COAG. It maps out Australia's water use and management objectives and actions and, importantly, sets out the basis on which freshwater resources are to be shared to support resilient and viable communities, healthy freshwater ecosystems and economic development. Water planning is particularly important for managing Australia's water resources effectively throughout the extremes in wet and dry climatic conditions and is critical where resources are contested.

Statutory water plans provide security to all water users through clearly defined entitlements to a share of water. Further, water planning is a participatory process that allows for community input to government decision making in relation to the management of water resources in their local area. Through the NWI, all jurisdictions have agreed to a set of key elements to include in their water planning frameworks and the closely linked water access entitlement frameworks (see NWI paragraph 25). It was agreed that these frameworks would:

- i. enhance the security and commercial certainty of water access entitlements by clearly specifying the statutory nature of those entitlements
- ii. provide a statutory basis for environmental and other public benefit outcomes in surface water and groundwater systems to protect water sources and their dependent ecosystems
- iii. be characterised by planning processes in which there is adequate opportunity for productive, environmental and other public benefit considerations to be identified and considered in an open and transparent way
- iv. provide for adaptive management of surface water and groundwater systems in order to meet productive, environmental and other public benefit outcomes
- v. implement firm pathways and open processes for returning previously overallocated and/or overdrawn surface water and groundwater systems to environmentally sustainable levels of extraction
- vi. clearly assign the risks arising from future changes to the consumptive pool
- vii. in the case of water access entitlements, be compatible across jurisdictions to improve investment certainty, be competitively neutral and to minimise transaction costs on water trades (where relevant)
- viii. reflect regional differences in the variability of water supply and the state of knowledge underpinning regional allocation decisions
- ix. recognise Indigenous needs in relation to water access and management
- x. identify and acknowledge surface water and groundwater systems of high conservation value, and manage these systems to protect and enhance those values
- xi. protect the integrity of water access entitlements from unregulated growth in interception through land use change.

Scope and method

At COAG's request, work on the inaugural report card began in 2011 in response to the Commission's recommendations in the 2009 assessment of the NWI (*Australian water reform 2009*). This report card not only delivers against ongoing commitments made when the first report card was prepared, but also contributes information towards the Commission's latest assessment of the NWI (*National water reform assessment 2014*).

The report card assesses whether the processes being developed and implemented align with commitments under the NWI and can deliver against NWI objectives. The report card assessment neither compares jurisdictions nor advocates any particular planning model. Rather it examines publicly available information on the legislation and policy currently in place for each planning area. Within this context, it is largely confined to a desktop assessment of the processes described, with a limited ability to analyse on-ground implementation arrangements. There is also little opportunity to examine the detail of water management practice within agencies and across various water utilities or river operators.

This report card presents a consolidated summary of the status of water planning across Australia as at 31 December 2013. Where significant changes have occurred in the intervening two years, it describes progress against the baseline established in 2011. It provides information on 174 planning areas across Australia (covering plans either in operation or in draft as at 31 December 2013). This includes updates on 153 planning areas assessed in the inaugural report card (four have now been incorporated into new plans) and additional information on 21 new planning areas (19 fully assessed and two mapped only).

The report provides assessments at the level of individual planning areas, as well as a summary of progress for each of the jurisdictions. The agreed method used in individual evaluations involves desktop assessments that rely on publicly available information, followed by consultation – both written and face-to-face – with representatives from relevant water planning agencies in each of the jurisdictions. Information in the public domain may include relevant legislation, supporting documentation including plain English explanatory versions of the planning arrangements, implementation plans, consultation reports, resource/condition assessments, environmental studies, economic and social studies, risk assessments, surveys, and M&E reports.

The 12-criteria evaluation framework used for assessments was developed as part of the first report card and is based on the main elements of water planning in the NWI and the NWI Water Planning Guidelines (see Appendix 2). Extensive internal and external consultation, peer review and quality assurance measures employed by the Commission ensured informed analysis and consistency in assessment of the criteria across all water plans. The Commission does acknowledge that a degree of judgement was still required to ensure contextual matters were adequately taken into account.

Murray–Darling Basin

The Murray–Darling Basin Plan was adopted on 22 November 2012. The Basin plan represents an overarching framework of water planning arrangements and, as such, was not assessed in this report card using the standard evaluation framework. Where relevant and material to *National Water Planning Report Card 2013*, either jurisdiction summaries and/or individual plan assessments identify and comment on specific Basin plan arrangements.

The finalisation of the Murray–Darling Basin Plan has clarified the sustainable levels of extraction inside the MDB and the intended timeframes for achieving reductions in water use where required. The Basin plan establishes sustainable diversion limits (SDLs), which in some cases differ from the extraction limits established by Basin states' existing water planning arrangements. As the SDLs come into effect in 2019, they will replace the current Murray–Darling Basin Cap on diversions; and as new Water Resource Plans (WRPs) are developed, they will replace existing state arrangements.

The Commission recognises that in the case of MDB jurisdictions, the Commonwealth Minister will accredit new WRPs under the Basin plan following advice from the Murray–Darling Basin Authority (MDBA). This accreditation process will be ongoing until 2019 and will satisfy the report card's requirements. Therefore, as water plans are accredited by the Minister they will consequently fall outside the scope of future report cards.

Structure of this report

Sections 3 to 10 are organised by jurisdiction. Each section has a jurisdictional summary and a set of individual assessments for each water plan area.

Individual assessments for each water plan area

Individual plan assessments apply the 12-criteria evaluation framework to each water plan in Australia. The individual assessment provides both direct answers to all criteria questions, as per the standard answers noted in Appendix 2, and comments with further details of the reasoning behind each answer given.

The standard answers provide a snapshot of which components of water planning – for that particular water plan – have been addressed well or are lacking. The comments associated with each answer provide insight into what factors contributed to the answer given. This comment is particularly important for highlighting the distinct factors affecting specific water plans and explaining any differences in answers across the same assessment criteria for water plans within the same jurisdiction.

Jurisdictional summaries

The findings from the individual plan assessments have been synthesised to develop an overview of how water planning operates in each jurisdiction. It is important to address water planning at the state and territory level, as well as the individual water plan level, given many of the associated functions are governed by jurisdiction-scale instruments, such as those for trade, compliance and enforcement and statewide policies that guide consultation and monitoring and reporting activities. The state and territory summaries provide important context for understanding how individual water plans are developed in each jurisdiction.

A summary of the key aspects of each jurisdiction's water planning framework has been compiled. Further, the key instruments that govern different aspects of water planning are linked to each of the report card assessment criteria. The descriptions help to bring greater transparency to what is often a very complex process.

The summary is then linked to a synthesis of the findings from individual water plan assessments to provide a general description of how water planning activities relate to the report card assessment criteria. This allows the opportunity to highlight areas of good practice and achievement as well as areas for further attention.

The multiple layers of information for each jurisdiction are consolidated into an assessment overview as a concise record of the key findings for each jurisdiction.

3 New South Wales

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The context of water planning in New South Wales

New South Wales has a diverse range of regulated and unregulated surface water and groundwater resources, and covers 56 per cent of the area of the Murray–Darling Basin. Extreme droughts and floods occur regularly across the state and rivers have historically had highly variable flow. The impacts of climate change are expected to increase evaporation and alter rainfall patterns and the levels of run-off, leading to further changes in the flow regimes of rivers and potentially affecting aquatic ecosystem health. Within this context, there are strongly competing demands for water between high-value conservation areas, productive industries, cultural and societal amenity, as well as high demand from urban areas.

Key legislation and policies

The key water planning instruments are the *Water Management Act 2000* (WMA 2000) and the associated water sharing plans (WSPs). The WMA 2000 established a statutory framework for managing water in NSW, although the original *Water Act 1912* continues to apply in areas that are not yet covered by WSPs (which account for less than five per cent of water use across the state).

Under the WMA 2000, water can only be taken from a water source under a water access licence, a basic landholder right (e.g. domestic and stock right, harvestable right, native title right) or a water access exemption (e.g. bushfire fighting). The objects and principles of the WMA 2000 recognise the need to allocate water for the environmental health of surface water and groundwater systems, while also providing licence holders with more secure access and greater opportunities to trade water.

Process for developing water sharing plans

WSPs are statutory instruments that can cover all, part of, or multiple water management areas, and apply to regulated rivers, non-regulated rivers and/or groundwater. They establish environmental water rules, rules for granting new licences, rules for making water available, account management rules and water trading rules.

The WMA 2000 provides for management committees to be established to prepare draft WSPs for public exhibition and eventual approval by the state Minister. These management committees are required to include a range of stakeholders (e.g. water users, Local Land Services representatives, Indigenous representatives).

The first round of WSPs that commenced in 2004 were prepared using the local committee approach, with extensive stakeholder consultation during draft plan development. In recent years the process of developing WSPs has been replaced by a macro approach that aggregates water sources into broader management units and is driven by an Interagency Regional Panel (IRP). The panel consists of government agency staff with local expertise on water-related issues, with the relevant Local Land Services as an observer. This shift in approach aimed to fast-track the preparation and commencement of WSPs to cover the remaining unregulated and groundwater sources that generally have lower-intensity water use compared with earlier planning areas. There have also been commitments to merge some of the plans that expire in 2014 with plans developed more recently or that cover larger areas.

Tenure and review of water sharing plans

WSPs generally have a lifespan of 10 years and can be extended for a further 10 years. All WSPs are required to be audited at intervals of not more than five years by a panel appointed by the Minister. The Natural Resources Commission (NRC) is tasked with reviewing plans after 10 years to inform the Minister's decision on replacement or extension.

Murray–Darling Basin Plan

The Murray–Darling Basin Plan was adopted in November 2012 and is relevant to several water resources in NSW. The Basin plan has reviewed the cap limits and set SDLs that reflect extraction levels considered sustainable in the long term for both surface water and groundwater. In some areas, the SDLs set under the Basin plan are lower than current extraction limits identified in WSPs. Most of the Basin plan's provisions do not take effect for several years, such as the SDLs which do not take effect until 2019, but some may influence water planning and management in the shorter term (e.g. environmental water delivery). Where these actions are relevant in 2013, they have been identified at the individual plan level.

Table 1: Summary of planning instruments in New South Wales

Assessment criteria	State		Region	Comment
	WMA 2000	State policy	WSP	
1. Status of plan	yes	yes	yes	WSPs establish water sharing arrangements for each water resource, including extraction limits, trading rules and environmental water provisions. There are also several state and regional plans and policies, as well as various pieces of state and Commonwealth legislation that relate to water planning in NSW. WSPs generally apply for a period of 10 years.
2. Key assessments			yes	Assessments (e.g. hydrological, socio-economic, environmental) are undertaken at the proposed plan area level, with further details on individual water sources provided in supporting documentation (e.g. report cards, background, guide).
3. Overuse status and pathways to sustainable water extraction		yes	yes	WSPs contain rules to manage environmental and consumptive water entitlements. Several state policies have been developed to guide the development of extraction regimes (e.g. Aquifer Interference, Floodplain Harvesting).
4. Clearly identified and measurable outcomes	yes	yes	yes	The WMA 2000 applies the principles of ecologically sustainable development. WSPs include overarching objectives, often detailing strategies and performance indicators for their achievement.
5. Facilitation of trade	yes	yes	yes	Upon commencement of WSPs, water licences held under the <i>Water Act 1912</i> are converted to water access licences under the WMA 2000, which separates water licences from land tenure, provides perpetual ownership of water licences and facilitates trade.
6. Integration of water intercepting activities	yes	yes	yes	Interception activities are largely controlled by statewide legislation and policies (e.g. Harvestable Rights, Aquifer Interference), with links to relevant WSP arrangements. WSPs may include estimates of some interception activities (e.g. farm dams, floodplain harvesting).
7. Surface water/ groundwater connectivity		yes	yes	Some WSPs focus only on single water resources, but may have connectivity estimates included in their underlying hydrological models. Based on the degree of connectivity, recent plans may include groundwater and surface water as the same water source, while other plans link groundwater rules to surface water rules.
8. Environmental water management arrangements	yes	yes	yes	The WMA 2000 outlines an overarching commitment to providing environmental water (planned and adaptive), but it is individual WSPs that detail the specific rules or entitlements of the provision in each surface or groundwater source.
9. Monitoring, compliance and enforcement provisions	yes	yes		New South Wales Office of Water (NOW) maintains a compliance and enforcement policy for monitoring extractions. The WMA 2000 requires WSPs to be audited every five years. Plans do not include monitoring arrangements – instead they rely on ongoing statewide monitoring activities that do not specifically evaluate progress against plan performance indicators.
10. Planning for climate change and extremes in inflows or recharge	yes		yes	Most WSPs consider climate variability through the use of long-term climate data for their development. Provisions for daily water access and adjustments to available water determinations indirectly account for climatic variability. The WMA 2000 provides for WSP suspension if a severe water shortage is declared, and this provision has been enacted for several WSPs in the past. While a plan is suspended, water is made available in accordance with the priorities specified in the WMA 2000.
11. Stakeholder engagement	yes		yes	The WMA 2000 requires stakeholder consultation during the development of plans and broader engagement with the community by way of exhibiting draft WSPs for the purpose of receiving public submissions. There is also provision for public submissions to be received when the NRC is reviewing WSPs.

Assessment criteria	State		Region	Comment
	WMA 2000	State policy	WSP	
12. Extent to which outcomes have been achieved	yes	yes	yes	The WMA 2000 requires audits of WSPs to assess the effectiveness of implementation and regular reviews of achievements. NOW is developing an evaluation framework to assess the effectiveness, efficiency and appropriateness of WSPs. The NRC's 10-yearly review of WSPs is also required to include an assessment of the contribution of WSPs to state Natural Resource Management (NRM) and Catchment Action Plan (CAP) targets.

Key findings

This section provides updated commentary on the previous report card assessment for NSW (key findings summarised below) and includes information on significant findings for 2013.

Previous findings

- *Coverage of planning accelerated through the NWI-consistent macro approach*
- *Shifting from single- to multiple-resource plans facilitates more integrated management*
- *Better coordination of monitoring and more consistent reporting needed to improve the assessment of water sharing plan outcomes*

2013 findings

Coverage of planning continues to increase

NSW continues to make good progress increasing coverage of water plans across the state. Since the 2011 report card, all nine plans that were in draft have been finalised and have commenced. A further eight new plans have been developed and become operational in this time and four draft plans are being publicly exhibited. This takes the total number of WSPs in NSW to 74, covering 95 per cent of water extracted in the state.

Timely and transparent process for scheduled review of plans

The NRC has reviewed all of the 31 WSPs from the first round of water planning in accordance with Section 43A of the WMA 2000. The Act stipulates, at the end of 10 years, that the Minister may make a new WSP (replacement) or, on the NRC's recommendation, extend a WSP for a further 10 years. This process must include a call for submissions from the public on the performance of WSPs. The NRC delivered its advice to the Minister regarding extension or replacement of plans in June 2013. NOW also delivered a review report to the Minister in July 2013. The Minister has recommended the replacement of these WSPs before July 2015. In addition, to rationalise arrangements, many of the older plans will be merged into new and recently commenced plans as they expire.

More targeted monitoring and effective evaluation needed to improve the assessment of plan outcomes

Although considerable data collection occurs and WSP audits have been publicly released by the Minister, improvements are needed in how plan performance is evaluated against stated outcomes. Some published results of monitoring demonstrate that a subset of WSP strategies is being implemented, and valley progress reports provide an update on ecological and socio-economic monitoring. However, evaluation of and reporting on progress towards high-level social, economic and environmental plan objectives is lacking. In some cases, there appears to be a mismatch between the monitoring data being collected and the information needed to answer evaluation questions. The WSP evaluation process that NOW is developing provides an opportunity to improve coordination and better target monitoring investment.

Findings against 12 criteria

1. Status of water planning	NSW has made significant progress in developing WSPs for the entire state since 2004. More than 95 per cent of the water extracted is covered by 74 operational or draft WSPs. Prioritisation of water planning activities is influenced by statutory obligations, available resources and assessments of risk to environmental, social and economic values of water resources. There is sometimes a lack of transparency around these decision-making processes and the relative importance of the influencing factors.
2. Do plans include key assessments?	Hydrological, socio-economic and environmental assessments were undertaken as part of the development of draft WSPs by local committees in 2004. Limited documentation about this process is available. The macro planning approach demonstrates an improvement in the documentation of key assessments. Water resource assessments, including the risk assessments that support decision making, are available online. The Aboriginal Water Initiative aims to engage Indigenous communities in water sharing and improve understanding of cultural values associated with water resources.
3. Do plans prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	All WSPs establish long-term extraction limits and specify rules for managing total water extractions to those limits. Most plans do this by requiring reductions to future water allocations should these limits be breached. A small number of plans have set clear pathways to reduce entitlements within the plan's life. The Basin plan has reviewed the cap limits and set SDLs that reflect extraction levels considered sustainable in the long term for both surface water and groundwater. In some areas, the SDLs set under the Basin plan are lower than the current extraction limits identified in WSPs.
4. Do plans include clearly identified and measurable outcomes?	NOW's review of the 2004 WSPs states that when they are replaced, all those plans should demonstrate better alignment between vision, objectives, strategies and performance indicators, thereby providing clearer documentation of the internal logic of plans. More recent plans are better at establishing objectives, strategies and performance indicators that can be monitored and reported against. Plans often rely on ongoing statewide activities, the suitability of which (for WSP purposes) is not optimal.
5. Do plans facilitate trade?	WSPs developed under the WMA 2000 create NWI-consistent, tradeable water access entitlements and detail the specific trading rules associated with each water source. The total volume of entitlement trade in 2012–13 was 684 GL with an estimated turnover (gross value) of \$616 million. The total volume of water allocation trading in 2012–13 was 3409 GL (including trades in, out and within the state), with an estimated turnover of \$168 million.
6. Is interception appropriately considered and integrated into plans?	Interception activities are largely controlled by the WMA 2000 and associated policies. For example, farm dams are controlled by the Harvestable Rights provision in the Act, and floodplain harvesting will be controlled by water licensing under the WMA 2000. Since 2011 NSW has finalised its Aquifer Interference policy which establishes the risk considerations involved in aquifer interference activities (e.g. mining, extractive industries, coal seam gas, dewatering, injection works).
7. Do plans include/address GW/SW connectivity as appropriate?	Provisions for the integrated management of surface water and groundwater resources vary between WSPs. In general, early single resource plans lacked provisions for integrated management of connectivity, even though this may have been addressed in their underpinning hydrological models. Recent policy changes have resulted in greater emphasis being placed on integrating surface water and groundwater management in later macro plans. Based on the degree of connectivity, recent plans may include groundwater and surface water as the same water source, while other plans link groundwater rules to surface water rules.
8. Do plans contain accountable environmental water management arrangements?	WSPs include accountable environmental water management arrangements. The WMA 2000 requires WSPs to include rules for the identification, establishment and maintenance of environmental water rules. Measuring the achievement of environmental outcomes is impaired by the lack of data available in some plan areas to quantify water requirements and/or assess the condition of environmental assets.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	The five-yearly audits of plan implementation and the 10-year WSP reviews are now publicly available but better coordination of monitoring data and more effective synthesis in reporting is needed to assess progress towards plan outcomes. Plans do not include monitoring arrangements and instead rely on ongoing statewide monitoring activities that do not specifically evaluate progress against plan performance indicators. NOW is in the process of formulating an evaluation framework specifically tailored to WSPs to assess their effectiveness, efficiency and appropriateness. Although NOW has established compliance and enforcement arrangements for monitoring extractions, metering of licensed water use has not begun in all water sources.

10. Do plans deal appropriately with climate change and extremes in inflows or recharge?	Historical climate variability data is considered during the development of most WSPs, depending on availability of records. Long-term climate change scenarios have informed the development of some recent macro plans, when data and models with conclusive outputs have been available. Some recent plans specify how water may be delivered during extended drought (e.g. Bega and Brogo rivers), although not all plans have provisions to manage extremes in inflows – as evidenced by the temporary suspension of five regulated river WSPs. Suspension of WSPs is permitted in the event of a severe water shortage under the WMA 2000 subject to a Ministerial decision. While a plan is suspended water is made available in accordance with the priorities specified in the WMA 2000.
11. Is stakeholder engagement in the planning process adequate?	Early WSPs used local water management committees to develop draft plans and this process generally resulted in extensive community consultation. More recent macro WSPs have been developed by an IRP and engagement is supported by online documentation, targeted consultation, community meetings to disseminate information, and public exhibition of draft water sharing rules. The recent 10-year review process undertaken by NRC and NOW included a transparent public submissions process to gather feedback on plan performance.
12. To what extent have identified outcomes been achieved during the reporting period?	Publicly available results of monitoring and audit reports demonstrate that some WSP strategies are being implemented, with progress evident in the achievement of objectives that relate to security of rights and trade. By contrast, the achievement of cultural and environmental objectives is difficult to assess due to a lack of coordinated monitoring and reporting. The NRC review concluded it was difficult to infer how much WSPs had contributed to progress towards state NRM targets due to a lack of relevant evaluation information.

Glossary and abbreviations

Term	Acronym	Definition
Annual watering plan	AWP	Descriptive non-statutory plan that summarises environmental watering arrangements.
Available water determinations	AWD	Determines how much water a licence holder can extract in a year.
Basic Landholder Rights	BLR	Rights for water use that do not require a licence; for example, landholders can extract water for stock and domestic use.
Catchment Action Plans	CAP	Plans developed by Catchment Management Authorities or Local Land Services to guide natural resource management.
Environmental Contingency Allowance	ECA	Volume of water provided in some water sharing plans for environmental purposes.
Floodplain harvesting	FPH	Collection, extraction or impoundment of water flowing across floodplains.
Great Artesian Basin	GAB	A multi-layered system of pressurised aquifers underlying significant parts of NSW, Queensland, South Australia and the Northern Territory.
Groundwater-dependent ecosystem	GDE	Ecosystems that are dependent on groundwater for their existence and health.
Integrated Monitoring of Environmental Flows	IMEF	Monitoring program to scientifically assess the ecological benefits of environmental flow rules. Established in 1997 and now terminated.
Long-term extraction limit	LTEL	Volume of water available to be extracted from a water source on average per year, also referred to as LTAAEL (long-term average annual extraction limit).
Murray–Darling Basin Authority	MDBA	
New South Wales Office of Water	NOW	Part of the Department of Primary Industries, responsible for the management of the state's surface water and groundwater resources.
Natural Resources Commission	NRC	Established in 2003 to provide the NSW Government with independent advice on managing natural resources.
Office of Environment & Heritage	OEH	Responsible for managing environmental water in NSW.
Reasonable Use Guidelines	RUG	Draft policy being developed to guide the exercising of basic landholder rights.
State Water Management Outcomes Plan	SWMOP	Sets overarching policy, targets and strategic outcomes for water management under the WMA 2000.
Water access licence	WAL	Entitles the holder to a share of the available water source and to take water from a specified location.
Water sharing plan	WSP	Statutory instrument which establishes environmental water rules and makes provisions for basic landholder rights, water extraction under access licences, water trading rules and establishment of bulk access regimes.

Planning areas

New South Wales: surface water sharing plan areas

Map 1



NSW

New South Wales: groundwater sharing plan areas

Map 2



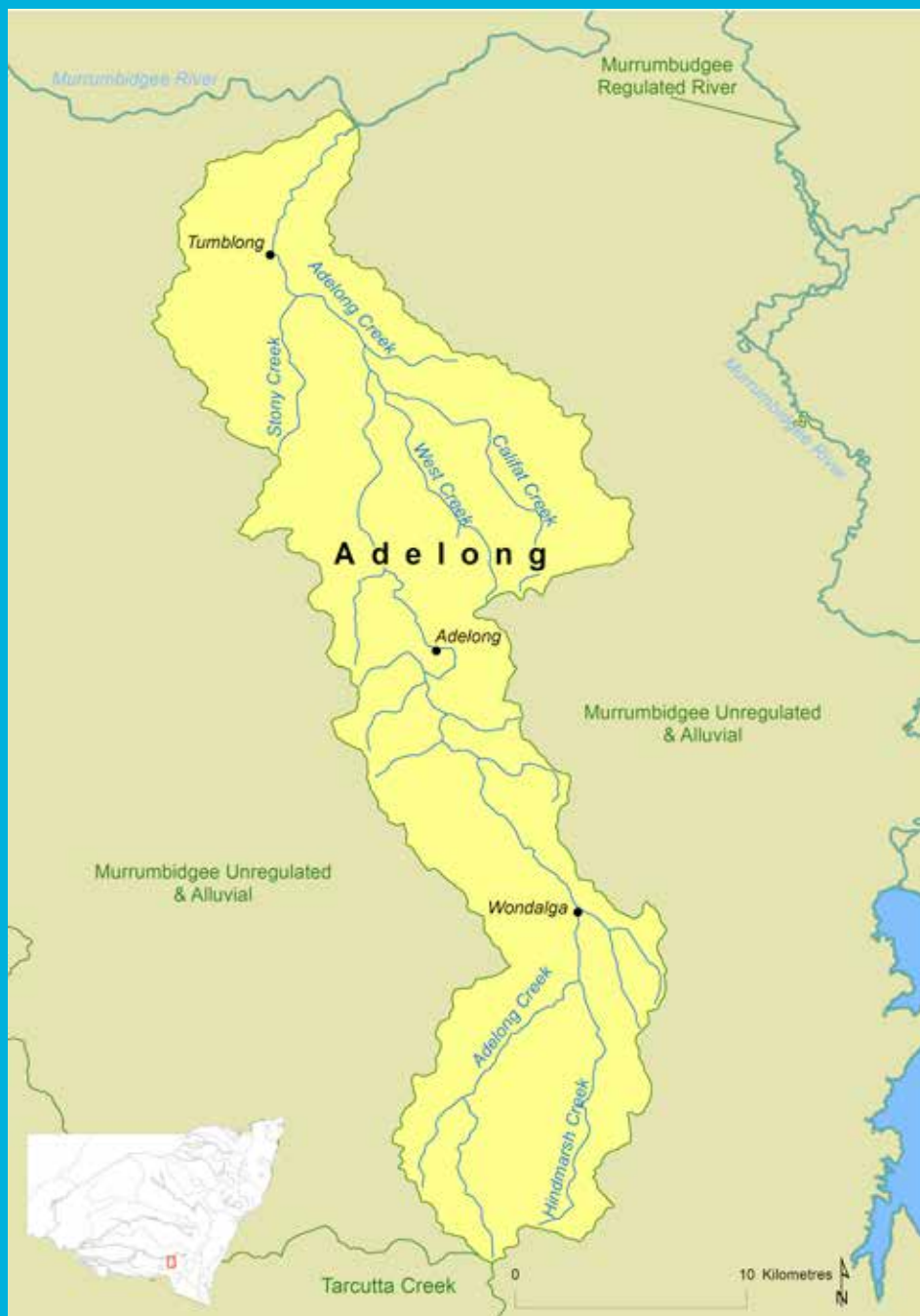
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ADELONG CREEK WATER SOURCE WATER SHARING PLAN 2003



Context

The Adelong Creek Water Source is located in southern NSW. It flows for about 70 km past the townships of Adelong and Tumblong, joining the Murrumbidgee River downstream of Gundagai. While there are many unregulated waterways in the upper Murrumbidgee catchment, some of the greatest volumes of water for irrigation are extracted from Adelong and Tarcutta creeks. In the 1998 Stressed Rivers Assessment Report, Adelong Creek was classified as being under high hydrological stress and prioritised for river management plan development. Despite being one of many unregulated rivers in the Murrumbidgee catchment, Adelong Creek has been managed under a discrete WSP that commenced in 2004.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters in the Adelong Creek catchment and its tributaries down to its junction with the Murrumbidgee River. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Murrumbidgee Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	To some extent	A local water management committee undertook some key assessments as part of plan development and drafting. Public documentation of this process has been limited (e.g. environmental asset condition, cultural values, connectivity). The 1998 Stressed Rivers Assessment Report also categorised the environmental and hydrological stress of this water source.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The environmental and consumptive use trade-offs that underpin the extraction limit are no longer publicly available.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for measuring this particular plan's effectiveness in achieving all outcomes have not been clearly articulated. While ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement, some trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for Basic Landholder Rights (BLR) but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of forestry and mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	The plan does not quantify the connectivity between surface water and groundwater. The potential impacts on connected systems are acknowledged via reference to maintenance of groundwater to sustain critical surface flows and ecosystems in the plan's objectives.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan contains environmental watering arrangements and responsibility for their delivery has been assigned. Environmental assets and their water requirements are not clearly detailed and monitoring is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Although monitoring to assess the effectiveness of the plan's environmental objectives has begun, the results have not been published. In addition, no assessment of the long-term average extraction has been undertaken because extraction is not comprehensively metered. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. The cease-to-pump rule will assign any potential reductions in supply to water users. There is no quantification of the potential risks to system health or entitlement securities due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Comprehensive metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information. Little information is available to determine progress towards achievement of environmental or cultural objectives.

ALSTONVILLE PLATEAU GROUNDWATER SOURCES WATER SHARING PLAN 2003



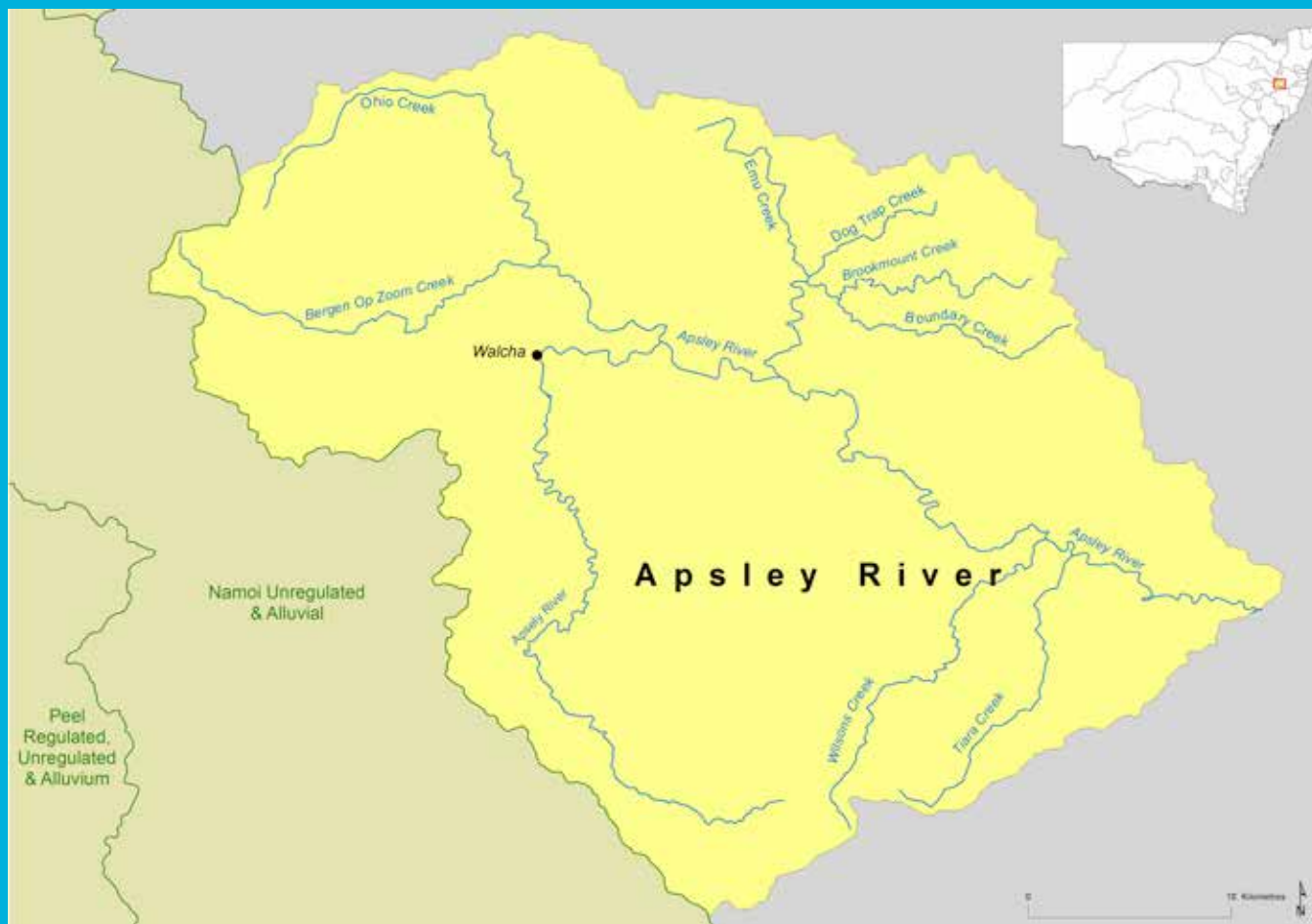
Context

The Alstonville Plateau Groundwater Sources are located on the NSW north coast and the towns of Bangalow, Alstonville and Lismore are located within the plan area. The Alstonville Plateau Groundwater Sources are highly connected to the surface water, and the basalt aquifer was classified as being at high risk of over-extraction and contamination in some parts during the 1998 Aquifer Risk Assessment reporting. A broad range of crops are grown on the plateau including stone fruit, nuts, potatoes and flowers and the area has been extensively cleared. Significant urban development was occurring on the plateau during plan drafting.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers groundwater sources within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged – along with the Dorriggo Basalt Groundwater Source and Kulnura Mangrove Mountain Groundwater Sources WSPs – into the North Coast Fractured and Porous Rock Groundwater Sharing Plan.
2. Does the plan include key assessments?	To some extent	Key assessments were completed from 1999 to 2002, but they were not clearly linked to the plan. No process has been identified for documenting or managing key risks to the water source, though over-extraction is an inferred risk.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but does recognise the system is at risk of over-extraction. An extraction limit has been established and the plan allows for reductions to allocations if it is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes, the achievement of which may be difficult to measure. The plan does link objectives to plan provisions but monitoring arrangements are not detailed, including the monitoring of risks.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other potential intercepting activities (e.g. forestry, mining).
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The plan is a single resource plan and addresses groundwater only, with no reference to integrated management arrangements and no links to other plans. Hydrogeological research is ongoing to improve groundwater modelling and knowledge of GDEs.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan outlines environmental watering arrangements but the water required to sustain GDEs is not quantified. Although the plan has provisions for adaptive environmental water, monitoring is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some monitoring of groundwater levels and socio-economic objectives is occurring, although the specific arrangements for monitoring have not been clearly described and comprehensive reporting on the plan's effectiveness is yet to occur. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	While the plan acknowledges climate variability, it assumes the in-built review cycle will provide sufficient adaptive capacity. The plan does not quantify the potential risks to system health or entitlement security as a result of climate change or variability.
11. Is stakeholder engagement in the planning process adequate?	Yes	Considerable information was made available to and received from the public during the stakeholder engagement process (e.g. targeted consultation during plan development, public exhibition of draft plan). Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards some outcomes has been made (e.g. maintenance of groundwater quality). A groundwater model has been developed to inform the establishment of extraction limits and monitoring bores have been installed. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. assessment of long-term average annual extractions against the plan limits, implementing the full range of trading rules). Audits of plan-implementation effectiveness publicly report this information.

APSLEY RIVER WATER SOURCE WATER SHARING PLAN 2003



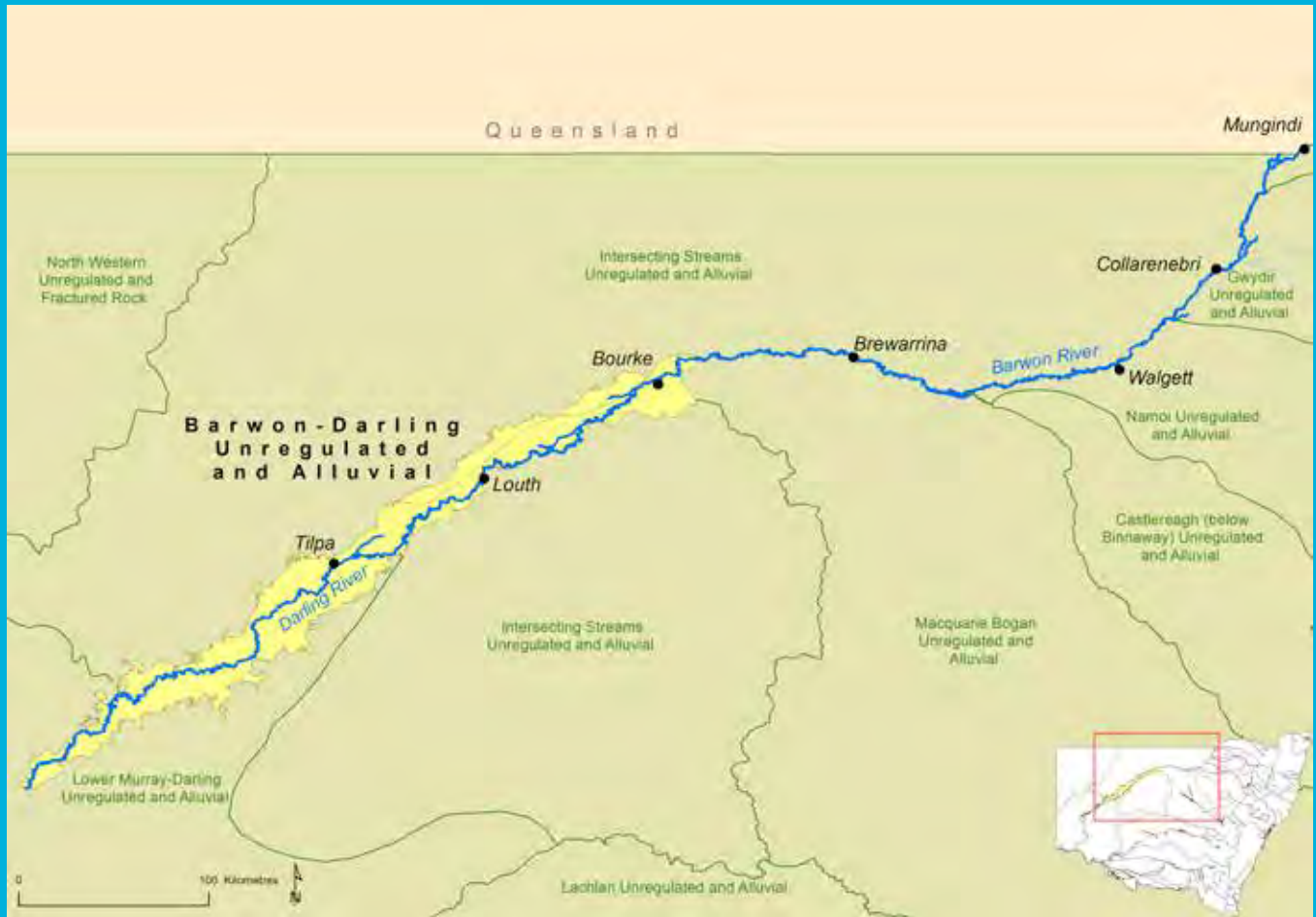
Context

The Apsley River is a tributary of the Macleay River in the northern tablelands of NSW. The catchment includes the town of Walcha and is an area of cultural significance for Aboriginal people. The plan area has been largely cleared for agriculture and is upstream of the Oxley Wild Rivers National Park. The Apsley River was rated as being under high hydrological and environmental stress in the 1998 Stressed Rivers Assessment Report. At the time of plan drafting there were 10 water access licences in the water source.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Macleay Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but does recognise the system as hydrologically stressed. The plan establishes the basis for a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information explaining the trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes, which are linked to the plan's provisions. Monitoring arrangements for measuring plan outcomes are not clearly specified within the plan or its supporting documents.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other potential intercepting activities (e.g. forestry), and the plan may be amended for licensing floodplain harvesting.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This WSP is a single resource plan that addresses surface water only, with no reference to integrated management arrangements and no links to other plans.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements based on the long-term average extraction limit and maintaining flow classes that dictate volumes to be taken on a daily basis, as well as cease-to-pump conditions on licences. The water requirements of environmental assets have not been quantified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	NRC and NOW each delivered a 10-year review of the plan in 2013. On the basis of this advice, the NSW Minister for Primary Industries has recommended replacement of the plan. While the 10-yearly review requirement is being met, the lack of consistent information and suitable methods of evaluation made it difficult for the NRC review to establish the extent to which plan's outcomes are being achieved. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. The cease-to-pump rule will assign any potential reductions in supply to water users. There is no quantification of the potential risk to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The draft plan was developed by a local committee that included stakeholder representatives and government agencies. Plan development involved extensive community engagement, which included public meetings, public exhibition of the draft plan and a public submissions process. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information. The plan's 10-year review found there was likely progress towards objectives but could not demonstrate the extent to which objectives had been met.

BARWON–DARLING UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



Context

The plan applies to the Barwon–Darling Unregulated River Water Source and the Upper Darling Alluvial Groundwater Source. The Barwon–Darling River is a semi-arid lowland river, the catchment of which covers a large area of the northern portion of the Murray–Darling Basin. Major tributaries to the Barwon–Darling include the Border Rivers, Gwydir, Namoi, Castlereagh and Macquarie rivers, which enter the Barwon–Darling River upstream of the township of Bourke. Downstream of Bourke and further west, the Paroo and Warrego rivers contribute intermittent flows but can provide significant volumes during floods.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters and alluvial groundwater within the planning area. The plan commenced in 2012 and applies for 10 years.
2. Does the plan include key assessments?	Yes	Several existing assessments, as well as some specifically conducted to support the planning process (i.e. risk assessment for the groundwater source), were considered during plan development. The validity of previous assessments was considered to establish whether to retain previous arrangements.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Licensed surface water entitlements were reduced from 524 to 173 GL in 2005 as the plan area was recognised as overallocated before plan commencement. The plan is designed to manage extraction within identified limits and when the limit is exceeded in any one year, the plan allows for corrective measures by lowering the available water determinations for the following year.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Although this plan clearly identifies objectives, strategies and performance indicators that can be measured over the plan's life, it does not include monitoring arrangements. The process for monitoring the performance indicators is to be outlined in the implementation program, which is not available.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan accounts for the main interception activities and includes appropriate allowances over the plan's life. Some intercepting activities are managed by external instruments, which are linked to the plan through the extraction limit and conditions that seek to protect the environment, the resource and existing users. The issue of potential extraction of incidental water from coal seam gas is not imminent in the catchment.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	This plan manages surface and groundwater sources in the plan area conjunctively. The degree of connectivity is defined as 'less highly connected' and therefore daily access rules are not required for extraction from the groundwater resource.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Although the plan includes clear provisions for environmental water, it does not identify monitoring arrangements or accountabilities. There is recognised overlap with Murray–Darling Basin Plan arrangements for monitoring, evaluation, reporting and compliance – which are still under development and therefore unclear.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	As the plan has operated for less than two years, it is too early to assess whether adequate monitoring is occurring and if compliance and enforcement mechanisms have been necessary. NSW has several ongoing monitoring arrangements but it is unknown whether these will report against the plan's performance indicators.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan does not recognise or account for future climate change. It does recognise historical climate variability and accounts for it by determining an extraction limit that is based on historical records and modelling that is calibrated against those records.
11. Is stakeholder engagement in the planning process adequate?	Yes	The stakeholder engagement process comprised a targeted consultation process and a public exhibition process. Numerous key stakeholders, interest groups and water user groups were consulted. There is ample evidence throughout the plan and supporting information that input from stakeholders and the broader community was used in developing and refining the plan's rules.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is less than two years old and there is no information available to assess either the implementation or outcomes of the plan.

BEGA AND BROGO RIVERS AREA REGULATED, UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2011



Context

The Bega River catchment is situated on the far south coast of NSW. Dairy and beef farming have largely supported growth of the regional economy since the 1850s, and the catchment contains high-conservation value environmental assets, such as the Bega River Estuary. There is significant development in some water sources of the Bega catchment and the Brogo and Bamboka rivers have been categorised as being under high environmental stress. The 1998 Stressed Rivers Assessment Report prioritised these areas for development of river management plans. Water sharing rules have been developed from water management committee recommendations, Healthy River Commission assessments and community consultation.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the unregulated and regulated surface waters, as well as the alluvial groundwater sources in the Bega and Brogo Rivers Area. It commenced in 2011 and applies for 10 years.
2. Does the plan include key assessments?	Yes	The plan and supporting documentation provide information on the key assessments undertaken (e.g. hydrological modelling, ecological assets, risk assessments) and include links to the studies that underpin the relevant data.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specific. Ecological and cultural objectives are broad and their measurement will require considerable effort. Flow and entitlement objectives are likely to be measurable using routinely collected hydrologic and trade parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception for BLR, including consideration of impacts from farm dams. Forestry was assessed during plan development as an insignificant interception risk. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan does recognise the connectivity of groundwater and surface water resources and facilitates their integrated management. For example, where surface water and groundwater sources are highly connected they are managed as one resource.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Environmental objectives are specified in the plan and the supporting documents provide detail on the water requirements of environmental assets. The plan's environmental water provisions will be given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report. Specific arrangements for monitoring the plan's effectiveness in achieving environmental outcomes have not been clearly articulated.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although the South Coast Valley Progress Report gives some information on studies underway, there is little detail on the achievement of plan outcomes or progress towards them. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Impacts to the environment and other users from variability in rainfall, inflow and recharge have been considered during plan development. An overall assessment of the likely risks posed by long-term climate change was undertaken during plan development.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive stakeholder engagement through several consultation phases. This included establishment of the South Coast Water Management Committee to ensure community input during plan preparation and feedback on draft water sharing arrangements.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes.

BELLINGER RIVER AREA UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2008



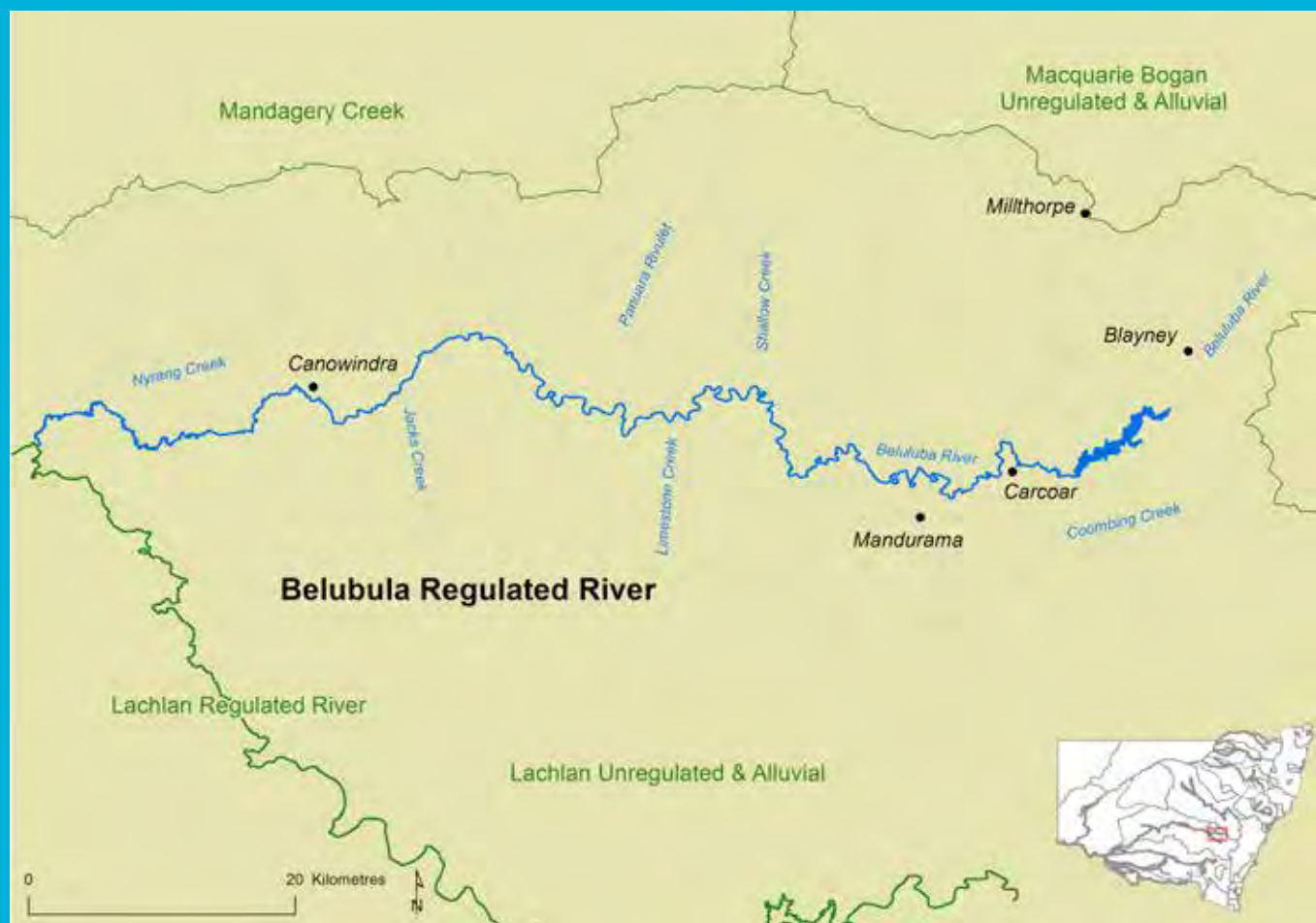
Context

The Bellingher River Area Unregulated and Alluvial Water Sources are located within the upper north coast catchment. The catchment's two main rivers are the Kalang and Bellingher. Rainfall is high in the Bellingher valley and coastal areas. The Bellingher catchment has high ecological values and regionally significant rainforest. Topography has dictated development in the catchment, with steep areas remaining forested and the narrow floodplain and associated foothills cleared for grazing, cropping and other uses. Forestry operations and agriculture are important contributors to the local economy but tourism is increasing.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational plan covers unregulated rivers, alluvial groundwater and tidal pool areas within the planning area. The plan commenced in 2008 and applies for 10 years. At the time of extension/replacement, it is proposed that this plan be merged with the Coffs Harbour Area WSP, resulting in a single plan covering the unregulated water sources in this catchment.
2. Does the plan include key assessments?	To some extent	The plan's development was based on key assessments informed by available studies, expert panel knowledge and community consultation. For some water sources there was a lack of information on in-stream values and community dependencies.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. An extraction limit has been established based on existing entitlements and the plan allows for reductions to allocations if the extraction limit is exceeded. The plan also establishes cease-to-pump rules based on daily flows and schemes to move extraction from low flows to higher flows.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad objectives, strategies and related performance indicators, but monitoring and reporting arrangements are not specific. Measurement of the plan's ecological objectives will require considerable monitoring effort. Most of the plan's objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The Bellinger catchment is considered an area in which no significant water interception activities are anticipated during the plan's life, although 80 per cent of the catchment remains forested. The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan identifies groundwater/surface water connectivity and includes water access rules that address impacts in connected aquifers and rivers within the plan area.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions. Preservation of low flows for environmental purposes is based on general ecological information but no area-specific environmental requirements have been identified. The objectives are broad, making the links between provisions and outcomes unclear.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some socio-economic monitoring is occurring as part of a statewide program. Metering of use is not widespread. Specific arrangements for monitoring plan effectiveness in achieving all outcomes have not been clearly articulated. No implementation program has been made public. Live daily flow volumes are online for existing gauges but the ecological monitoring program has not been established. The plan and its supporting framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. There is no quantification of the potential risks to system health or entitlement securities due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement included targeted consultation pre-draft and public submissions accepted on the draft plan. An Interagency Regional Panel drafted the plan and all submissions were responded to in the updated report cards re-issued with the finalised plan.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been no reporting on plan-implementation progress or its effectiveness in delivering its intended outcomes. NOW advises that the five-year audit of plan implementation is underway.

BELUBULA REGULATED RIVER WATER SOURCE WATER SHARING PLAN 2012



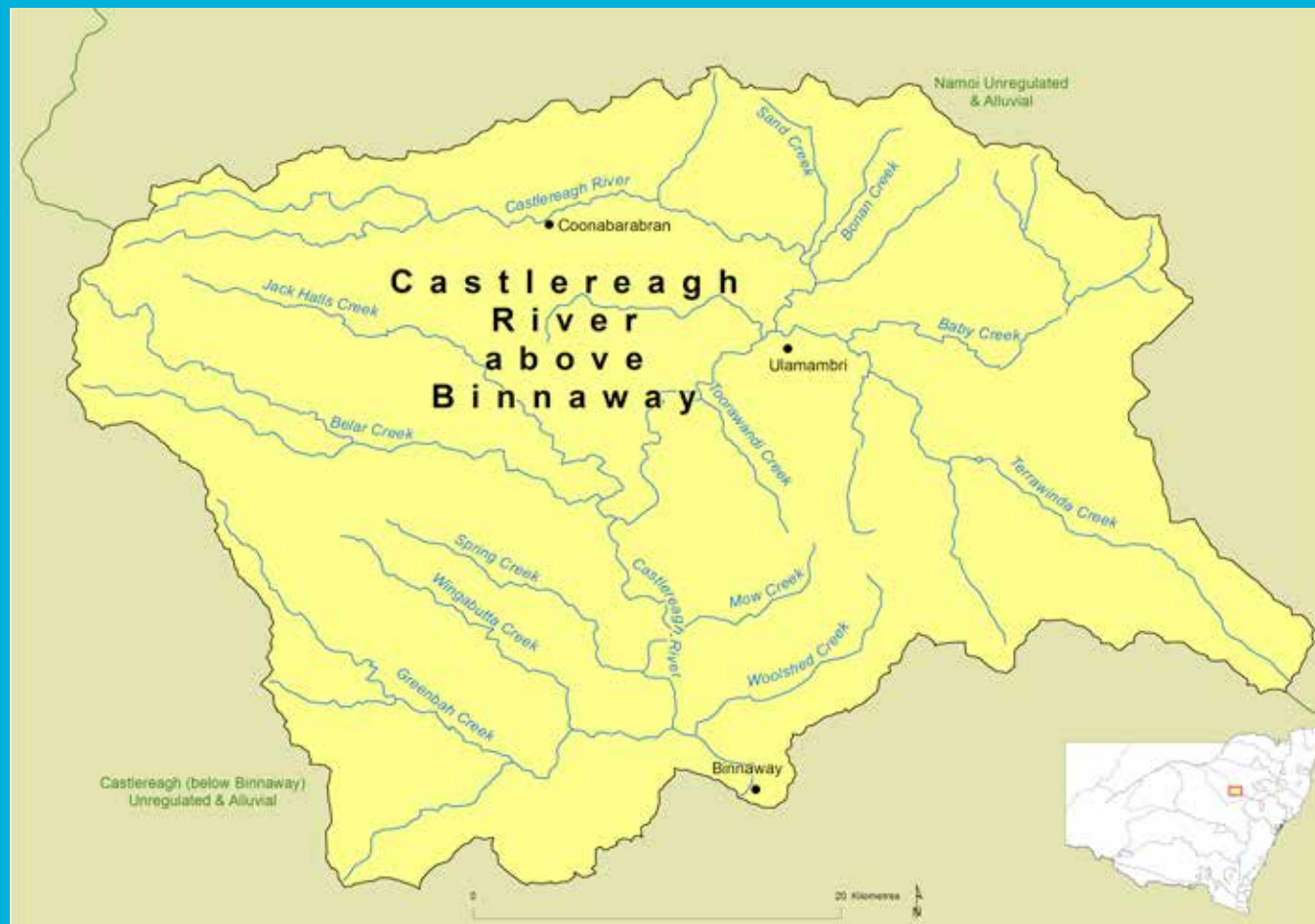
Context

This plan applies to the Belubula Regulated River Water Source, which is located in central-west NSW near the towns of Carcoar and Canowindra. Flow in the Belubula River is regulated by releases from Carcoar Dam. The regulated Belubula River is highly connected with the adjoining alluvial aquifer, which is located in the downstream section of the system. Flow from the river into the alluvial aquifer is well recognised and managed conjunctively through rules in the Lachlan Unregulated and Alluvial WSP. Little information is available on the river's ecological features, but several threatened species have been identified and some wetlands in the river's lower reaches are known to be in poor health.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan that covers regulated surface water commenced in 2013 and applies for 10 years.
2. Does the plan include key assessments?	Yes	A comprehensive hydrologic assessment using an integrated water quantity and quality model was undertaken as part of plan development.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan establishes a long-term average annual extraction limit (LTAAEL) and rules to manage extraction within the limit. Although the plan does not identify overallocation, existing entitlements exceed the plan's LTAAEL. Current use is well below the limit.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan details objectives, strategies and performance indicators, which can be assessed over the plan's life. The plan does not identify monitoring arrangements. The plan contributes to statewide targets and it is required that this contribution be reported in accordance with the NSW MER (Monitoring, Evaluation and Reporting) framework for natural resource management.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan accounts for the main interception activities and includes appropriate allowances over the plan's life. Some intercepting activities are managed by external instruments, which are linked to the plan through the extraction limit and conditions that seek to protect the environment, the resource and existing users.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan manages surface water as a single resource. There is a high degree of connectivity with the underlying alluvial aquifer, which is managed separately by the Lachlan Unregulated and Alluvial WSP.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan's environmental watering arrangements consist of an end-of-system minimum flow and a cease-/commence-to-pump threshold for high flows. The dam operator is responsible for environmental releases that ensure compliance with environmental water rules. The links between environmental water and water-dependent ecosystems are not clearly established and monitoring relies on statewide programs.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan does not include specific monitoring arrangements, but relies on state-based arrangements. These are used for several purposes, including evaluation of contributions to statewide targets. The plan and its supporting framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. There is no quantification of the potential risks to system health or entitlement securities due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Stakeholder engagement took place in the form of targeted and public consultation, as per the planning process. The plan and supporting information have little detail about stakeholders, and there is no public record of submissions and how issues were resolved.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is only one year old and hence there is no reporting against the plan outcomes as yet. It is unclear whether sufficient monitoring arrangements are in place to enable assessment against the plan's performance indicators. There is ongoing monitoring to enable reporting against statewide targets on the condition of riverine ecosystems. Some monitoring of socio-economic aspects is occurring, but at a regional and statewide rather than plan area level.

CASTLEREAGH RIVER ABOVE BINNAWAY WATER SOURCE WATER SHARING PLAN 2003



Context

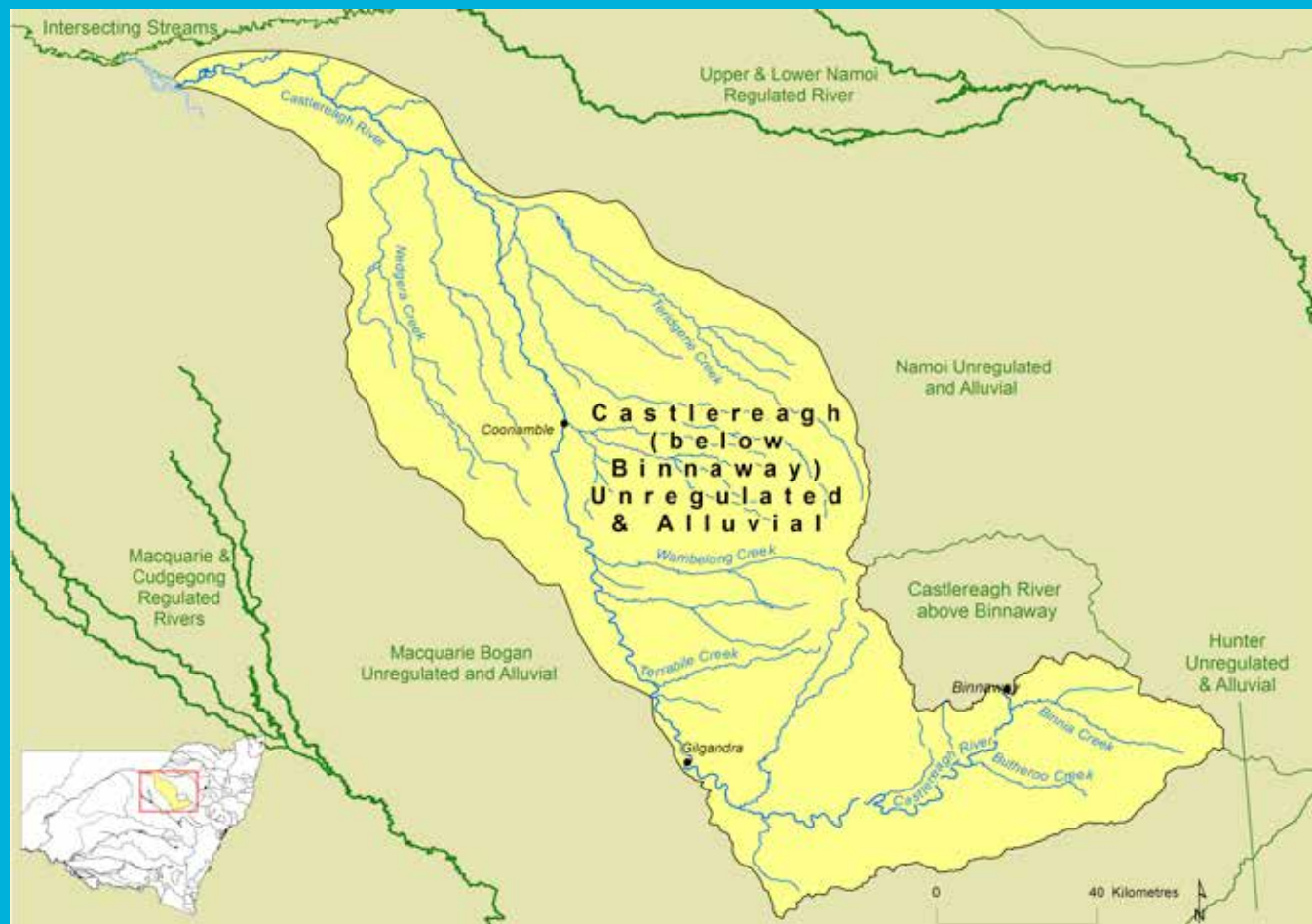
The Castlereagh River above Binnaway Water Source is located in the upper reaches of the Castlereagh Valley in central-west NSW. Water sharing for the remainder of the system is managed under the WSP for the Castlereagh River Unregulated and Alluvial Water Sources. The Castlereagh above Binnaway is characterised by highly variable flow patterns and low-flow conditions predominate. December tends to be the time of the lowest flows but this coincides with the highest consumptive demand for irrigation, industry, town water supply and domestic and stock uses. The main uses of irrigation water are for cropping, pasture, viticulture and horticulture. The planning area is considered hydrologically stressed because of the high reliance on the system's low flows. Previous water access tensions within the system have demonstrated that, without equitable water sharing arrangements, upstream users have the ability to reduce flows to the extent that downstream licence holders or BLR users are unable to obtain water.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Castlereagh River (below Binnaway) Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but does recognise the system is hydrologically stressed. It establishes an extraction limit and allows for reductions in allocations if the level of extraction from all unregulated water take exceeds the limit set by the unregulated rivers component of the Macquarie–Castlereagh Valley Murray–Darling Basin cap. Information on the trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad objectives, strategies and related performance indicators, but monitoring and reporting arrangements are not specific in the plan or its supporting documentation. Measurement of some of the plan's ecological objectives will require considerable monitoring effort. Most of the plan's objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities, such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan that addresses surface water only, with no reference to integrated management arrangements.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. It establishes cease-to-pump levels to protect pool connectivity during low-flow periods and daily flow sharing volumes to protect natural flow variability. The environmental water provisions are based on the hydro-ecological assumption that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Environmental flow response and socio-economic monitoring commenced in 2008, with the first results published in 2010. Subsequent results are not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not explicitly deal with climate change, rather it assumes the in-built review cycle will provide sufficient adaptive capacity. There are some self-adjustment mechanisms for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Individual submissions and an overall summary of issues raised are publicly available.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information. Monitoring of the ecological and socio-economic outcomes of the plan has begun but it is difficult to assess achievements because little public reporting of results has occurred to date.

CASTLEREAGH RIVER (BELOW BINNAWAY) UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2011



Context

The Castlereagh Unregulated and Alluvial Water Sources are located in central to north-western NSW. The Castlereagh River is within the Murray–Darling Basin and joins the Macquarie system close to its confluence with the Barwon River near Brewarrina. The area's rainfall varies considerably from year to year, with around half the annual rainfall typically recorded from November to March. The streams that drain the Warrumbungle Range provide most of the area's run-off and, between Mendooran and downstream to Coonamble, the river quite often flows below the surface through extensive sand beds. Consumptive water use includes irrigation, town water supply and domestic and stock uses. Limited flow and water usage data exists for the Castlereagh system, however planning has recognised the system is hydrologically stressed.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters and alluvial groundwater within the planning area. The plan commenced in 2011 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Some key assessments were conducted to support the plan's development, including estimates of consumptive use. The standard macro planning assessments (e.g. risk assessments for water sources, condition of environmental assets) were not made publicly available during the exhibition period.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse, but it does recognise the system is hydrologically stressed. The plan establishes a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information explaining the environmental and consumptive use trade-offs that underpin the extraction limit were not made publicly available during the exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes supported by management strategies. Monitoring and reporting arrangements are not specified in the plan or its supporting documentation.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception activities have been identified within the plan, including potential increases in water demand related to BLR. Much of this potential demand is unquantified. Several statewide policies guide the management of intercepting activities such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises surface water and groundwater connectivity and addresses it appropriately. The Castlereagh Alluvial Groundwater Source has been classified as not being highly connected with the Castlereagh River (less than 70 per cent of groundwater pumped within an irrigation season is derived from streamflow) and thus will be managed under the plan using groundwater rules only.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The environmental watering arrangements required to meet the plan's environmental objectives are not specified but are somewhat implicit in the water management rules (i.e. cease-to-pump levels).
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Except for a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	While the plan acknowledges climate variability, it assumes that the in-built review cycle will provide sufficient adaptive capacity. The plan does not quantify the potential risks to system health or entitlement security as a result of climate change. It also does not specify entitlement securities under the current climatic regime.
11. Is stakeholder engagement in the planning process adequate?	To some extent	The stakeholder engagement process provided opportunities for input and advice from interested parties during the plan's development. The information used to determine the water source classifications and indicative water access and trading rules was not publicly available during the exhibition period (e.g. risk assessments).
12. Have identified outcomes been achieved during the reporting period?	To some extent	As the plan has only operated for two years, there has been minimal reporting of plan-implementation progress or effectiveness in delivering its intended outcomes to date.

CENTRAL COAST UNREGULATED WATER SOURCES WATER SHARING PLAN 2009



Context

The Central Coast Unregulated Water Sources cover more than 156 000 ha immediately north of Sydney. The plan includes the rivers and creeks flowing into Tuggerah Lakes, a large coastal saltwater lake, as well as those flowing into the Hawkesbury River, a coastal river popular for recreation and recognised as supporting the state's second-largest commercial fishery. The main consumptive water uses within the planning area are irrigation, town water supply and BLR. The area has significant primary industries such as turf growing and fruit and vegetable production but is also highly urbanised, particularly around Tuggerah Lakes and Brisbane Water. Gosford/Wyong Council Water Authority is the largest water user, supplying urban water services to 285 000 people: this number is projected to grow to 350 000 by 2020. Managing competing urban water, agricultural and environmental water demands is the primary planning driver.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2009 and applies for 10 years. In 2014, when the Ourimbah Creek and Jilliby Creek WSPs are due for remake, a merger with this plan is proposed. This would result in a single plan covering the unregulated water sources in the catchment.
2. Does the plan include key assessments?	To some extent	Some key assessments were conducted to support the plan's development and were based on existing studies, regional expert knowledge and community consultation. The data used to inform the assessment of current water use and users was compiled in 2000 but the environmental water requirements of identified in-stream values were not assessed.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify overuse, but it does recognise that some areas are under high hydrological stress. It establishes an extraction limit set at full development of pre-existing entitlements. Daily management arrangements (i.e. cease-to-pump levels) are based on existing licence conditions or visible flow conditions, rather than access rules identified by the macro classification process.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented outcomes and related performance indicators. The plan's socio-economic and ecological objectives are broad and their measurement will require considerable effort.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan notes that new plantation developments will be monitored and assessed to determine if a water access licence is required. It addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Surface water and groundwater were assessed as not being highly connected (less than 70 per cent of groundwater pumped within an irrigation season is derived from streamflow). Integrated management was therefore not considered appropriate; a groundwater plan will instead be developed for the area.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Environmental water provisions are based on existing licence conditions or visible flow conditions, rather than the access rules identified by the macro classification process or environmental water requirements. The plan allows for delayed introduction of access rules based on investigations of appropriate cease-to-pump arrangements, but there is no evidence to show that these investigations have begun.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The Valley Progress Report states that some studies have commenced, but there is minimal information on the achievement of plan outcomes or progress towards them. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. The plan was developed using the macro approach, which uses indices for hydrological stress (risk to entitlement security from limits to supply) and risk to in-stream value to determine water sharing rules. As each of the plan's water sources has a cease-to-pump rule, any potential supply reductions are borne by the water user. Construction of urban water supply infrastructure for the central coast under the Gosford/Wyong Council Water Authority's 40-year demand planning strategy (WaterPlan 2050) will improve the security of supply for entitlement holders.
11. Is stakeholder engagement in the planning process adequate?	To some extent	The stakeholder engagement process sought to engage all relevant stakeholders and provided opportunities for their input and advice throughout the plan's development. While stakeholder input was transparently reported in the final plan's supporting documentation, the data that the Regional Expert Panel used to determine the initial water source classifications and indicative water access rules and trading rules was not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been minimal reporting of plan-implementation progress or effectiveness in delivering its intended outcomes to date.

CLYDE RIVER UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN (DRAFT)



Context

This draft WSP is intended to apply to 35 water sources in the South East Water Management Area, on the south coast of NSW. It comprises surface water and associated alluvial aquifers, managed through three extraction management units. Major storages in the plan area include Porters Creek Dam, operated by Shoalhaven Water to supply water to Milton and Ulladulla. Eurobodalla Shire Council pumps water from the Buckenbowra River to Deep Creek Dam to supply the townships of Batemans Bay and Malua Bay. The main water uses in the catchment include public water supply, tourism, forestry, cattle grazing, dairy farming, oyster farming and fishing. The health of the catchment influences the health of the Clyde estuary.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	A draft plan is being revised following comments received during the public exhibition period in mid-2013. The plan is expected to commence in 2014.
2. Does the plan include key assessments?	Yes	As per the macro approach for unregulated and groundwater sources, risk assessments of in-stream value, economic value and community water dependence were undertaken for all water sources in the plan area. These were refined through targeted consultation and will be further amended with input from public consultation concluded in June 2013.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify past overuse or overallocation, and water resources generally have a low level of hydrologic stress. The plan establishes a long-term extraction limit (LTEL) – which will be quantified once the conversion from non-volumetric licences is completed – and has measures to adjust the available water determination when the limit is exceeded. Effective implementation of the LTEL depends on the ability to meter or accurately estimate water use.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes objectives, strategies and performance indicators that can be measured over the plan's life. The plan does not specify monitoring arrangements and appears to rely on existing processes, which may or may not be appropriate.
5. Does the plan facilitate trade?	To some extent	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. Trading will be enabled once land-based entitlements are converted to volumetric entitlements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. No other potential intercepting activities are considered but the plan allows for amendments for future inclusion.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan accounts for the highly connected nature of surface water and alluvial aquifers and manages the two resources conjunctively in the same plan.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Although the plan contains environmental watering arrangements and responsibility for their delivery has been assigned, monitoring is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The plan is still in draft, so an assessment of this criterion is not possible at this time. There are several statewide monitoring arrangements in place that can be used to support this plan's purposes. Once operational, the plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges risk to resource availability due to climatic variability. It is not clear whether this variability was quantified and included in the estimate of LTEL. The plan includes mechanisms to constrain water use within limits, and these indirectly account for climatic variability.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan is in draft and up to this stage the macro process has been followed. Much of the information is not yet publicly available.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is still in draft, so an assessment of this criterion is not possible at this time.

COFFS HARBOUR AREA UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2009

Context

This WSP area is located on the mid north coast of NSW and covers 13 small coastal catchments from Pine–Bungaree Creek in the south to Station Creek in the north. Coffs Harbour is generally warm and subtropical with average rainfall high and variable. The area is recognised as having high biological diversity with significant coastal, rainforest and estuarine wetlands and headland rock platforms supporting a variety of threatened species. The plan covers surface water and groundwater in the region generally upstream of the tidal limit. Systems in the plan area were identified as being under high hydrological and environmental stress in the 1998 Stressed Rivers Assessment Report. The area supports the production of beef cattle and intensive agricultural and horticultural activities, while a large proportion of the catchment is NSW State Forest (35 per cent).



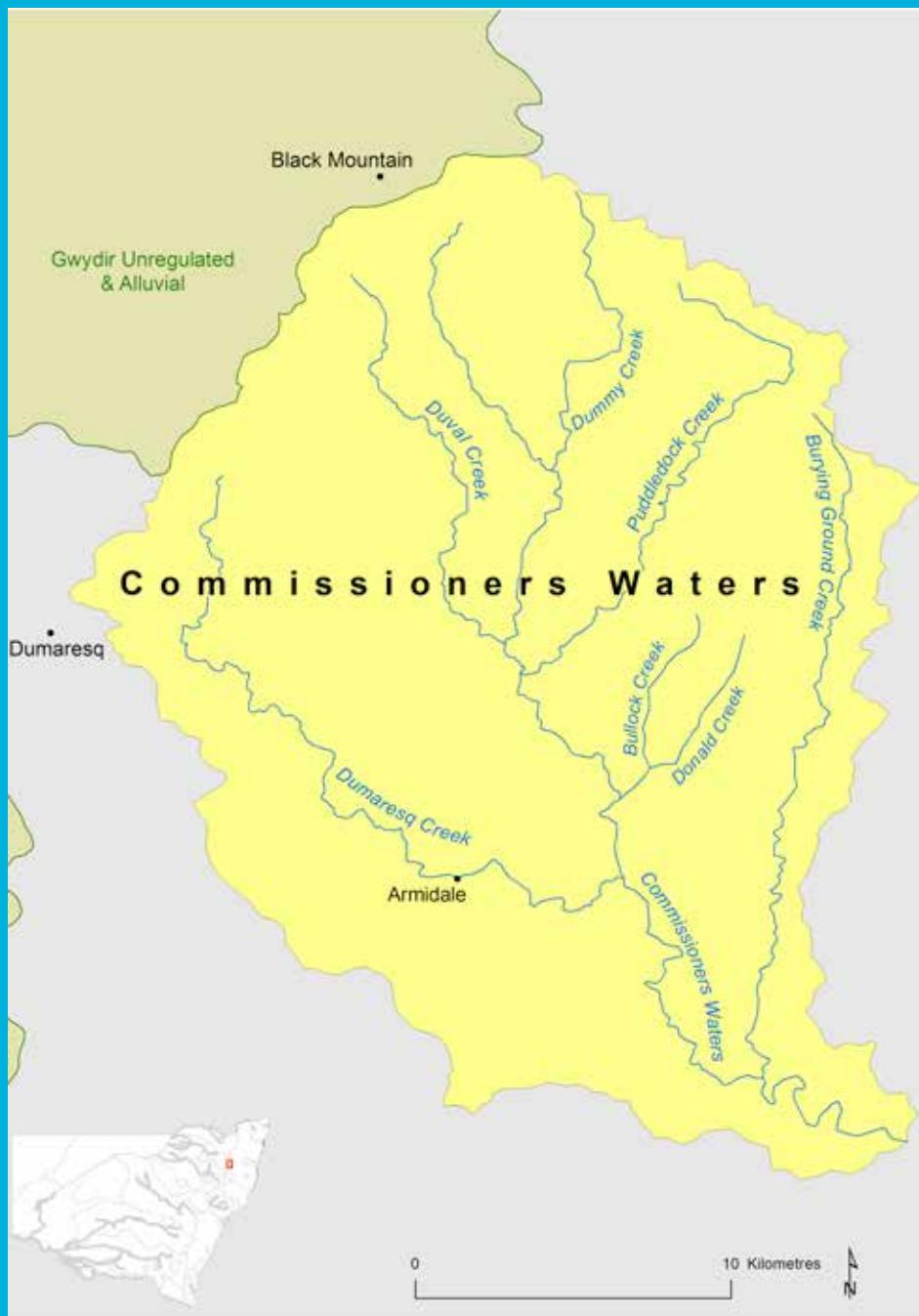
Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan commenced in 2009 and applies for 10 years. In 2018, when the Bellinger River Area WSP is due for remake, a merger with this plan is proposed. This would result in a single plan covering the unregulated water sources in the catchment.
2. Does the plan include key assessments?	To some extent	Key assessments were informed by available studies, expert panel knowledge and community consultation. Existing available information used to inform the plan was more than five years' old by the time the plan was drafted.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. It establishes a long-term extraction limit and allows for reductions to allocations if the limit is exceeded. Provisions were also made in the plan for daily extraction limits, but no systems were identified for limit implementation at commencement of the plan.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes, the achievement of which will be difficult to measure. NOW acknowledges that it will not be practicable to monitor all issues in all water sources and will focus on high-risk water sources.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	No significant water interception activities are anticipated during the plan's life, although 35 per cent of the land is owned by NSW State Forests. The plan accounts for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan addresses the integrated management of surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Environmental water is provided through the establishment of extraction limits and cease-to-pump rules. Preservation of low flows for environmental purposes is based on general ecological information but no area-specific environmental requirements have been identified. The objectives are broad, making the links between the provisions and the outcomes unclear.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some socio-economic monitoring is occurring as part of a broad statewide program and the Coffs Harbour Ecohealth Project monitors riverine and estuarine health in the planning area. Specific arrangements for monitoring this plan's effectiveness have not been clearly articulated despite seven of the plan's 13 water sources being considered high priority for ecological monitoring and evaluation. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan considers climatic variability but does not deal with long-term climate change; rather it assumes the in-built review cycle will provide sufficient adaptive capacity.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement was undertaken during River Flow Objectives consultation in 1997. Stakeholders were invited to make submissions on the draft plan, which was developed by an Interagency Panel.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

COMMISSIONERS WATERS WATER SOURCE WATER SHARING PLAN 2003

Context

Commissioners Waters is a tributary of the Macleay River on the northern tablelands of NSW. The plan area is characterised by undulating, cleared agricultural land and Oxley Wild River National Park is immediately downstream. Commissioners Waters is a relatively low-flowing river compared with other eastern-flowing water sources in northern NSW. The 1998 Stressed Rivers Assessment Report assessed Commissioners Creek as being under high hydrological and environmental stress. December tends to be the month of the lowest flows, coinciding with the time water demand for irrigation is high (e.g. irrigated pasture, turf). Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability is the primary planning driver. Although a tributary of the Macleay River, Commissioners Waters Water Source has been managed under a separate WSP, which commenced in 2004.

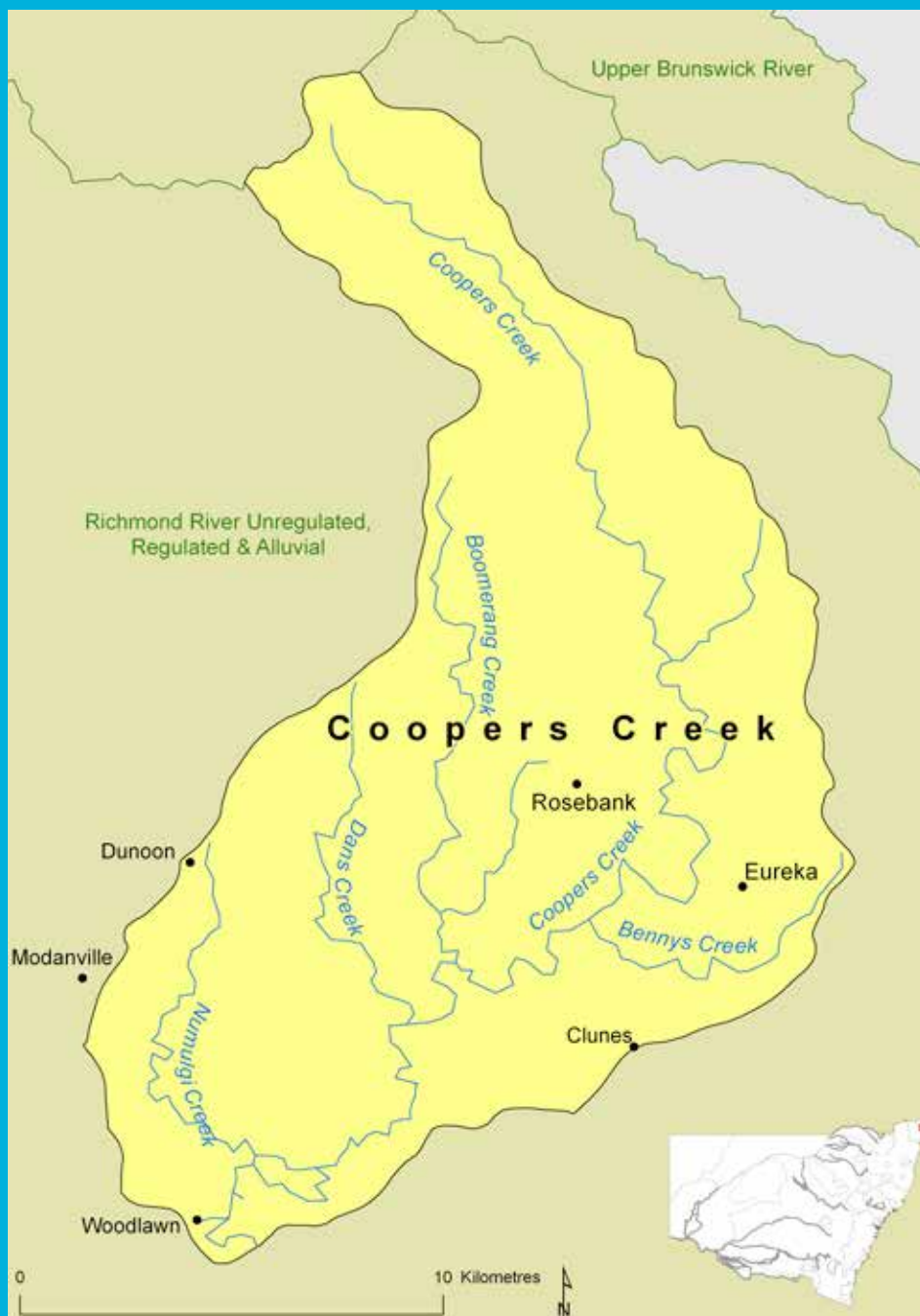


Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when its provisions will be merged into the Macleay Unregulated and Alluvial Water Sources WSP being developed at present. The provisions contained within the Apsley River Water Source and Toorumbbee River Water Source will also be merged into the new plan.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The planning area is considered overused and hydrologically stressed. The plan establishes a long-term extraction limit based on existing licensed use and environmental water provisions to manage critical periods of resource stress. The plan allows for reductions to allocations if the extraction limit is exceeded.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented outcomes, strategies and related performance indicators, but monitoring and reporting arrangements are not specific. Some of the plan's ecological objectives are broad and their measurement will require considerable effort. Most of the plan's objectives are measurable using routinely collected hydrologic parameters. Socio-economic objectives are measured as part of a broad statewide socio-economic monitoring program.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities, such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan that does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan contains environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump rules to protect pool connectivity during low-flow periods, and daily flow sharing volumes to protect natural flow variability. The environmental provisions are based on the hydro-ecological assumption that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Environmental flow response and socio-economic monitoring commenced in 2008, with the first results published in 2010. Subsequent results are not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not deal with climate change; rather it assumes that the in-built review cycle will provide sufficient adaptive capacity.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information. A report published in 2011 on monitoring and evaluation to assess the ecological and socio-economic performance of each WSP on the north coast concluded there was not yet enough information to assess this plan's effectiveness.

COOPERS CREEK WATER SOURCE WATER SHARING PLAN 2003



Context

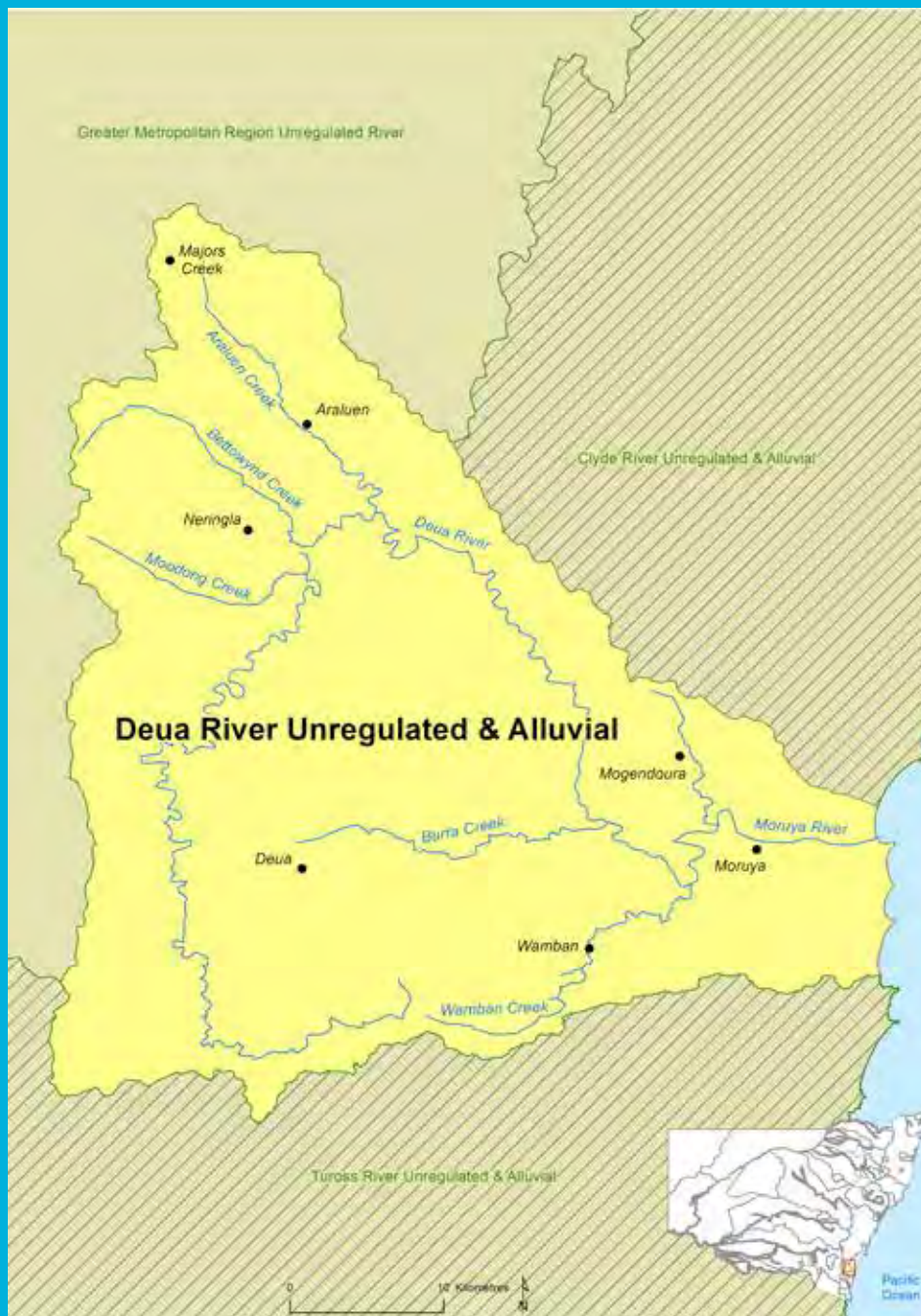
Coopers Creek is a coastal upland system in north-eastern NSW. Water sharing in Coopers Creek has been managed under an individual plan despite it being a tributary of the Richmond River. The Coopers Creek subcatchment receives significant annual rainfall in the summer and autumn months, but consumptive water demand peaks during the typically dry spring period. An important consideration for the plan was to provide water for the endangered Eastern freshwater cod. The plan was challenged in the Land and Environment Court by the Coopers Creek Water Users' Group, which was concerned that the plan's cease-to-pump conditions were overly stringent and had the potential to seriously affect the viability of their businesses. Implementation of the out-of-court settlement required several amendments to the plan, which were finalised in February 2011.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Richmond River Area Unregulated, Regulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the water management provisions within the plan, as well as its 2011 amendments. Apart from the socio-economic assessment that informed the 2011 amendments, these assessments are no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, although the system is considered hydrologically stressed during low-flow periods. The plan establishes a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented objectives, strategies and related performance indicators, but monitoring and reporting arrangements for measuring achievement against these is not specific. Most of the plan's objectives are measurable using routinely collected hydrologic parameters, but some ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Possible interception impacts of plantation forestry have not been considered despite the existence of state forests and other agro-forestry operations in the plan area.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan that does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan contains environmental watering arrangements, including cease-to-pump rules to protect pool connectivity during low-flow periods, and responsibility for their delivery has been assigned.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Environmental flow response and socio-economic monitoring commenced in 2008, with the first results published in 2010. Subsequent results are not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. The cease-to-pump rule will assign any reductions in supply to water users. There is no quantification of the potential risk to entitlement securities due to long-term climate change, but background material did consider the risks to system health during plan development.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Individual submissions and an overall summary of issues raised are publicly available.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of the effectiveness of the implementation of plan provisions publicly report this information.

DEUA RIVER UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN (DRAFT)



Context

The Deua River is on the south coast of NSW between Batemans Bay and Narooma. The draft WSP is intended to apply to eight water sources, combining surface water and associated alluvial aquifers in the South East Water Management Area. The plan establishes two management zones and two extraction management units. The main water uses in the catchment are agriculture and forestry industries. The Deua River catchment provides habitat for the Australian grayling (a freshwater fish) and several threatened bird and frog species, as well as peatlands and swamps. The river system contains large areas of undisturbed catchment protected in declared Wilderness Areas.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	A draft plan is being revised following comments received during the public exhibition period. The plan is expected to commence in 2014.
2. Does the plan include key assessments?	Yes	As per the macro approach for unregulated and groundwater sources, risk assessment of in-stream value, economic value and community water dependence was undertaken for all water sources in the plan area. These were refined through targeted consultation and will be further amended with input from the public consultation concluded in June 2013.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify past overuse or overallocation, and water resources generally have a low level of hydrologic stress. The plan establishes a LTEL (which will be quantified once the conversion from non-volumetric licences is completed) and has measures to adjust the available water determination when the limit is exceeded. Effective implementation of the LTEL depends on the ability to meter or accurately estimate water use.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes objectives, strategies and performance indicators that can be measured over the plan's life. The plan does not specify monitoring arrangements and appears to rely on existing processes, which may or may not be appropriate.
5. Does the plan facilitate trade?	To some extent	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. Trading will be enabled once land-based entitlements are converted to volumetric entitlements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. No other potential intercepting activities are considered but the plan allows for amendments for future inclusion.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan accounts for the highly connected nature of surface water and alluvial aquifers and manages the two resources conjunctively in the same plan.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Although the plan has environmental watering arrangements and responsibility for their delivery has been assigned, monitoring is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The plan is still in draft, so an assessment of this criterion is not possible at this time. There are several statewide monitoring arrangements in place that can be used to support this plan's purposes. Once operational, the plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges risk to the availability of the resource due to climatic variability. It is not clear whether this variability was quantified and included in the estimate of LTEL. The plan includes mechanisms to constrain water use within limits, and these indirectly account for climatic variability.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan is in draft and up to this stage the macro process has been followed. Much of the information is not yet publicly available.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is still in draft, so an assessment of this criterion is not possible at this time.

DORRIGO PLATEAU SURFACE WATER SOURCE AND DORRIGO BASALT GROUNDWATER SOURCE WATER SHARING PLAN 2003



Context

The Dorrigo Plateau is located in the south-western corner of the Clarence catchment and forms the headwaters of the Nymboida River, a major tributary of the Clarence River. Several national parks and the town water supply extraction points for the Clarence Valley and Coffs Harbour water supply systems are located downstream of the plan area. The plan area has one surface water source (rivers and creeks of the Dorrigo Plateau) and one groundwater source (Dorrigo Basalt aquifer). Rivers on the Dorrigo Plateau flow most of the year due to contributions from groundwater. Surface water demands for irrigation are high during the low-flow months of September to December. Groundwater is extracted mainly for domestic and stock purposes, but the largest extraction is for commercial bottled water. Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability is the primary planning driver.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface water and groundwater within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when its unregulated water sources will be merged into the Clarence Unregulated and Alluvial WSP. The Dorrigo Basalt Groundwater Source will be merged with the North Coast Fractured and Porous Rock Groundwater WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the water management provisions within the plan. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify overuse, but the area is considered hydrologically stressed. The plan establishes an extraction limit that permits increased daily access to some medium and high flows (which it acknowledges may cause a future decline in aquatic ecosystem health). Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes that have supporting strategies and performance indicators. Monitoring and reporting arrangements are not specified. Most of the plan's objectives are measurable using routinely collected hydrologic parameters. The measurement of some of the plan's ecological objectives will require considerable monitoring investment.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Possible interception impacts of plantation forestry have not been considered despite the existence of state forests and other agro-forestry operations in the planning area.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan addresses surface water and groundwater connectivity in the Dorrigo Plateau. The plan recognises the groundwater contribution to surface water baseflow and several high-priority GDEs. A conservative groundwater extraction limit and groundwater extraction exclusion zones have been established to protect these assets.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan contains environmental watering arrangements and responsibility for their delivery has been assigned. The plan's environmental provisions limit annual and daily extraction and regulate the development of water-affecting activities (e.g. buffer zones for high-priority GDEs). The environmental provisions are based on the hydro-ecological assumption that mimicking natural flow variability or protecting a percentage of groundwater recharge will protect environmental assets.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some monitoring of groundwater levels and socio-economic objectives is occurring, but the specific arrangements for monitoring have not been clearly described and comprehensive reporting on plan effectiveness is yet to occur. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not deal with climate change; rather it assumes that the in-built review cycle will provide sufficient adaptive capacity.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards some outcomes has been made (e.g. maintenance of groundwater quality). A groundwater model has been developed to inform the establishment of extraction limits and monitoring bores have been installed. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. assessment of long-term average annual extractions against the plan limits, implementing the full range of trading rules). Audits of plan-implementation effectiveness publicly report this information.

GREATER METROPOLITAN REGION GROUNDWATER SOURCES WATER SHARING PLAN 2011



Context

This WSP covers 13 groundwater sources located on the east coast of NSW. The region is bounded by the Hawkesbury River catchment to the north and west and the Shoalhaven River catchment to the south and south-west. The region also includes the groundwater of the Illawarra and metropolitan Sydney. Most water licences in the plan area are for irrigation, with a significant proportion also used for industrial purposes. The Greater Metropolitan Region has a significant number of groundwater-dependent ecosystems, such as karsts, springs and wetlands, some of which are sensitive to water extraction. The development of a WSP for the groundwater sources of the Greater Metropolitan Region was undertaken in conjunction with the unregulated WSP, with both plans commencing on 1 July 2011.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan for the Greater Metropolitan Groundwater Sources commenced in 2011 and applies for 10 years.
2. Does the plan include key assessments?	Yes	The plan includes hydrological, socio-economic and environmental assessments of all water sources in the area, along with a risk categorisation linked to the development of water sharing arrangements.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for the measurement of these are not specific. While ecological and cultural objectives are broad and will require considerable monitoring investment to assess their achievement, some trade and entitlement related objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception activities are considered with provisions to protect environmental assets and comply with the LTAAEL. There is coal seam gas development in the Camden area and, as per the Aquifer Interference policy, it is subject to water licensing and compliance with source extraction limits. The BLR Reasonable Use Guidelines have not been finalised.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises the connectivity between surface water and groundwater, and the potential impacts on connected systems are acknowledged. This plan is closely linked to the WSP for the Greater Metropolitan Region Unregulated River Water Sources.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has accountable environmental watering arrangements but water requirements for all environmental assets are not clearly detailed and monitoring of plan effectiveness in achieving environmental outcomes has not been clearly articulated. Some monitoring of the plan's effectiveness in delivering its water security objectives will be recorded in various registers that document available water determinations and trade activity.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	No specific monitoring arrangements are detailed for this particular plan. There is little information available to assess the adequacy of monitoring and implementation of compliance mechanisms. In 2013 NOW launched a smart phone application that gives users access to real-time existing monitoring data for ongoing decisions.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved targeted stakeholder consultation on proposed water sharing arrangements. Community feedback on the draft plan was sought through public meetings and calls for public submissions. The background document provides information on the submissions received and the responses made to address concerns raised by stakeholders.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is relevant monitoring and reporting by state programs that cover some actions relevant to the plan's intended outcomes (e.g. environmental flow responses, socio-economic monitoring), but these activities do not specifically address plan objectives.

GREATER METROPOLITAN REGION UNREGULATED RIVER WATER SOURCES WATER SHARING PLAN 2011

Context

The Greater Metropolitan Region Unregulated River Water Sources are located on the south-eastern coast of NSW and include the rivers of the Illawarra and metropolitan Sydney. The area has important wetland ecosystems that support a significant number of threatened species. Rivers in the region have highly variable flows. The area has numerous water storages to supply metropolitan Sydney and other major cities and towns which support around 70% of the state's population; included are the 11 storages with a total capacity of 2,582 GL managed by the Sydney Catchment Management Authority. Other uses for water in the area include irrigation for fodder, vegetable, fruit and flower production; mining; and recreational and commercial fishing, especially in the estuaries. Balancing the supply of water for consumptive uses with environmental requirements in the region is complex due to a growing population, highly variable rainfall and the potential impacts of climate change. The development of a WSP for the unregulated water sources of the Greater Metropolitan Region was undertaken in conjunction with the groundwater WSP, with both plans commencing on 1 July 2011.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan for the Greater Metropolitan Unregulated River Water Sources commenced in 2011 and applies for 10 years.
2. Does the plan include key assessments?	Yes	The plan includes hydrological, socio-economic and environmental assessments of all water sources in the area, along with a risk categorisation linked to the development of water sharing arrangements.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for the measurement of these are not specific. While ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement, some flow, trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan identified interception activities known at the time of its development and made allowances for them over the plan's life. The plan committed to monitoring and amendments, if required (without specifically identifying threshold values). There is pressure for growth of coal seam gas co-produced water on the existing consumptive pool which, as per provisions of the Aquifer Interference policy, would be subject to water licensing.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises the connectivity between surface water and groundwater, and there is acknowledgment of the potential impacts on connected systems. This plan is closely linked to the WSP for the Greater Metropolitan Region Groundwater Sources. The plan does not address surface water loss which may be due to ground subsidence in designated special [catchment] areas associated with underground coal mining.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental watering arrangements including a range of strategies that aim to deliver environmental objectives (e.g. protection of low flows, first flush rules). Monitoring to assess their achievement is not clearly detailed in the plan or supporting documents. Environmental water provisions are given effect in Water Supply Work Approvals and corporate licence holders are required to provide annual compliance reports.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although the plan does not identify specific requirements, monitoring is taking place, along with reporting for multiple purposes and by several agencies. There is a legislative framework to provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges summer and winter predictions of mean annual rainfall reduction, but it is yet to incorporate these into streamflows and estimate their effects in water access/trading rules.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved targeted stakeholder consultation on proposed water sharing arrangements. Community feedback on the draft plan was sought through public meetings and calls for public submissions. In addition, a Ministerial Advisory Group was established to help identify ways to address community concerns.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Reporting against the plan's outcomes is not yet due. There is relevant monitoring and reporting by other state programs (flows, water quality, socio-economic, and ecosystem health), but it is unclear whether appropriate arrangements are in place to enable assessment of plan outcomes.

GWYDIR REGULATED RIVER WATER SOURCE WATER SHARING PLAN 2002



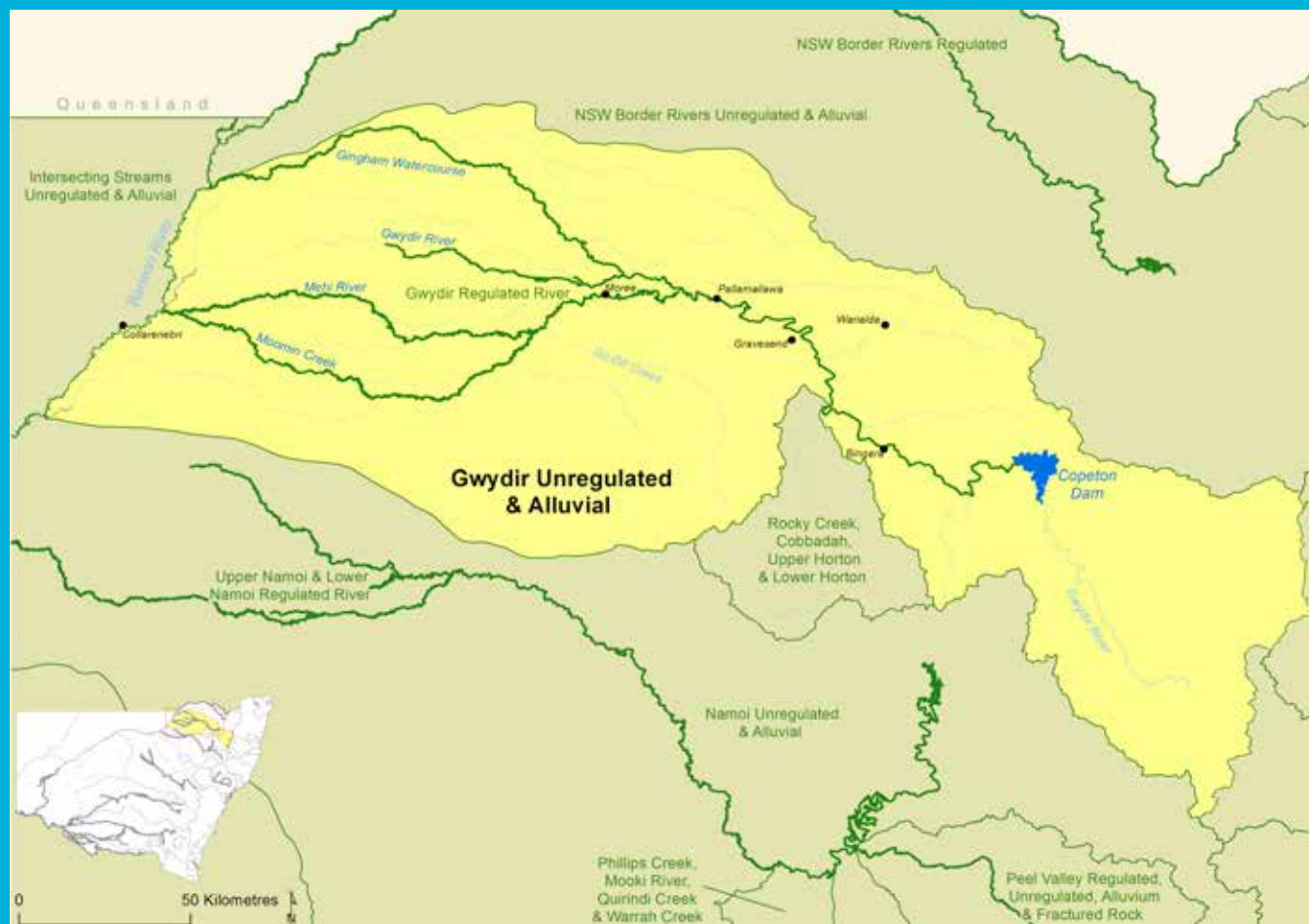
Context

The Gwydir River is located in north-western NSW and is regulated by Copeton Dam. Major water users in the catchment include local councils and water utilities, dryland agriculture, livestock grazing and irrigated agriculture (e.g. cotton). The Gwydir Valley also has a mosaic of semi-permanent and ephemeral wetlands, parts of which are listed under the Ramsar Convention on Wetlands of International Importance. This water system is highly developed and the extraction of water and operation of Copeton Dam have significantly altered the volume and pattern of flows in the valley. As a consequence there has been a range of impacts on the environmental health of the river and its wetlands, and on water quality in the catchment. A key management issue is the equitable sharing of water between competing water users and the environment.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the regulated surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by 2015.
2. Does the plan include key assessments?	Yes	A local water management committee conducted key assessments (e.g. environmental assets and condition, economic values) as part of plan development and drafting. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information explaining the trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented outcomes and related performance indicators but monitoring arrangements are not detailed. The plan's ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement. Extraction and trade-related objectives are measurable using routinely collected parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of floodplain harvesting, forestry and mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements (e.g. flows to the Gingham and Lower Gwydir wetlands), but the water requirements of environmental assets have not been quantified by empirical studies and monitoring is not a clearly embedded component of the plan or supporting documents. Environmental water provisions are given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Monitoring to assess progress towards the plan's environmental objectives has begun and results from these ecological studies have recently been published. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards the implementation of some plan actions, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Audits of plan-implementation effectiveness publicly report this information. Little information is available to determine progress towards achievement of environmental or cultural objectives.

GWYDIR UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



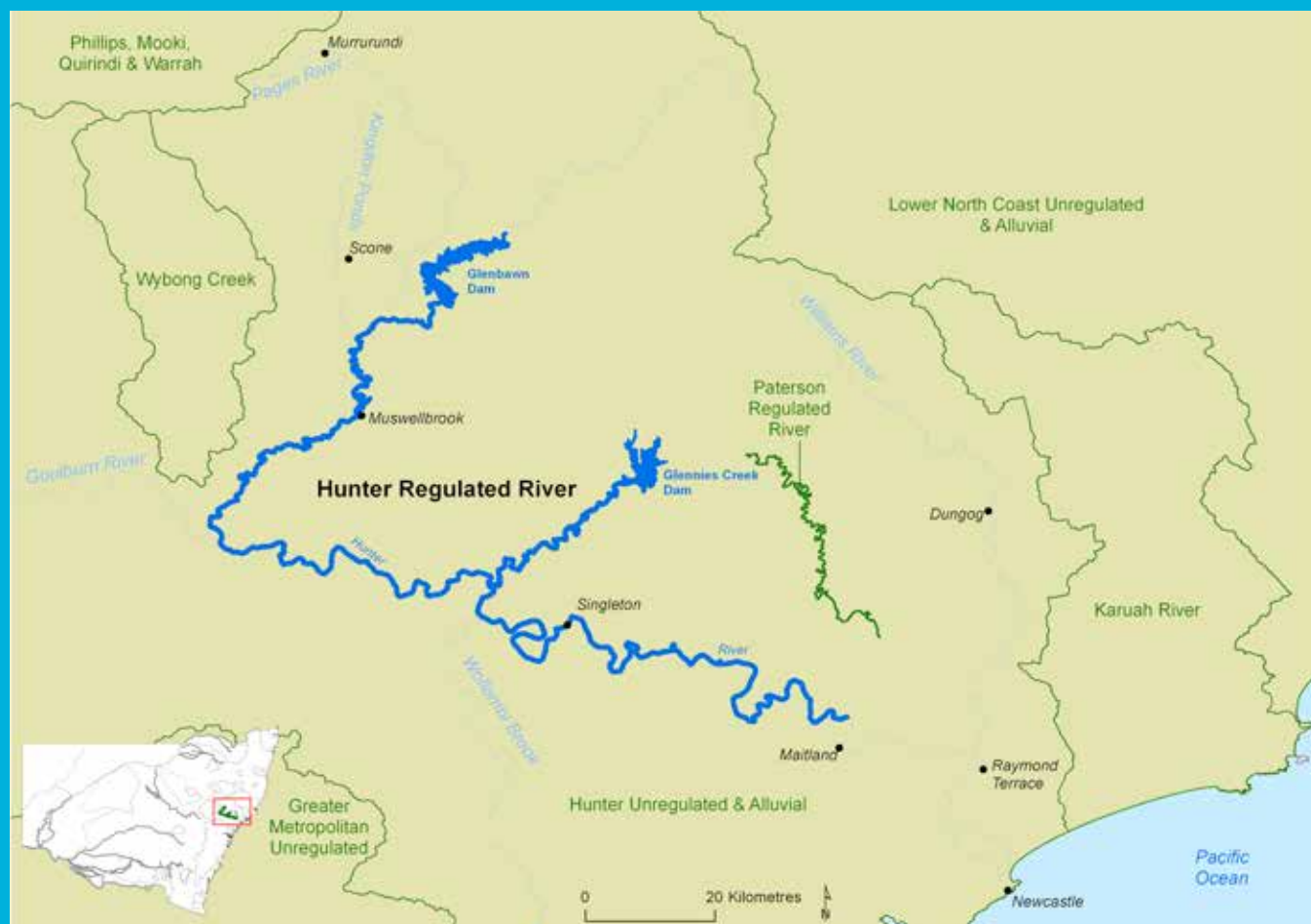
Context

This plan applies to 27 surface water sources and one alluvial groundwater source, all of which are located within the Gwydir catchment in the northern Murray–Darling Basin. The plan area includes wetlands with high environmental value listed in the Ramsar Convention, as well as places of deep significance to Aboriginal people. Indigenous Australians comprise eight per cent of the area's population, compared with two per cent of the total NSW population. The dominant land use is dryland beef and sheep grazing. The largest town in the plan area is Moree.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan commenced in August 2012 and is due for extension or replacement in 2022. Several publicly available reports document the macro approach to developing WSPs in unregulated catchments.
2. Does the plan include key assessments?	Yes	The plan was developed using the macro approach that requires risk assessments for in-stream value, economic value and community dependence on water extraction. These risk assessments were further informed by local studies and information from local sources, in addition to the public consultation process.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan area is at full allocation. The plan does not provide for additional licences unless they are for specific purposes (Aboriginal cultural licences). It permits exceeding the LTAAEL above specified thresholds over rolling five-year periods, primarily in recognition of climatic variability and associated usage variability. The plan has rules to manage extraction in line with the LTAAEL and prevent overallocation and overuse.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Although the plan details objectives, strategies and performance indicators, which can be assessed over the plan's life, it does not identify monitoring arrangements.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan identified known interception activities at the time the plan commenced and made allowances for them over the plan's life. The plan requires water access licences for farm dams that exceed the maximum harvestable right. The plan does not specify monitoring requirements for interception activities. Some intercepting activities may be managed by arrangements outside the plan (e.g. mining through Aquifer Interference policy – though none are known), which require compliance with plan conditions.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan conjunctively manages water resources from 27 unregulated river sources and the Upper Gwydir alluvial groundwater source. The plan identifies that the groundwater source is highly connected to the Gwydir River regulated resources and manages this connectivity using annual available determinations.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has clear arrangements (licensing arrangements, distance restrictions, LTAAEL, cease-to-pump rules for flow classes) that are designed to protect environmental values in the different water sources. The plan does not specify monitoring arrangements.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although the plan does not identify specific arrangements, monitoring is taking place and reports for several purposes and by several agencies are prepared and published. NOW is in the process of developing a risk-based strategy to improve MER to assess the effectiveness and performance of WSPs against their key performance indicators.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges risk to the availability of the resource due to climatic variability, which is taken into account in the LTAAEL. The plan includes mechanisms which indirectly account for climatic variability such as the extraction limit and the cease-to-pump rules. The adaptive management approach allows for plan amendments when new information becomes available.
11. Is stakeholder engagement in the planning process adequate?	Yes	The stakeholder engagement process followed that prescribed by the macro approach. It comprised a targeted consultation and public exhibition process. There is evidence of stakeholder engagement, but any records are not available publicly. Numerous groups were consulted to provide feedback and refine the rules.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is less than two years old and hence no reporting against its outcomes has occurred as yet. It is unclear whether sufficient monitoring arrangements are in place to enable assessment against the plan's performance indicators. There is some monitoring to enable reporting against statewide targets on the condition of groundwater and riverine ecosystems. Some monitoring of socio-economic aspects is also being undertaken, but at the region/statewide rather than plan area level.

HUNTER REGULATED RIVER WATER SOURCE WATER SHARING PLAN 2003



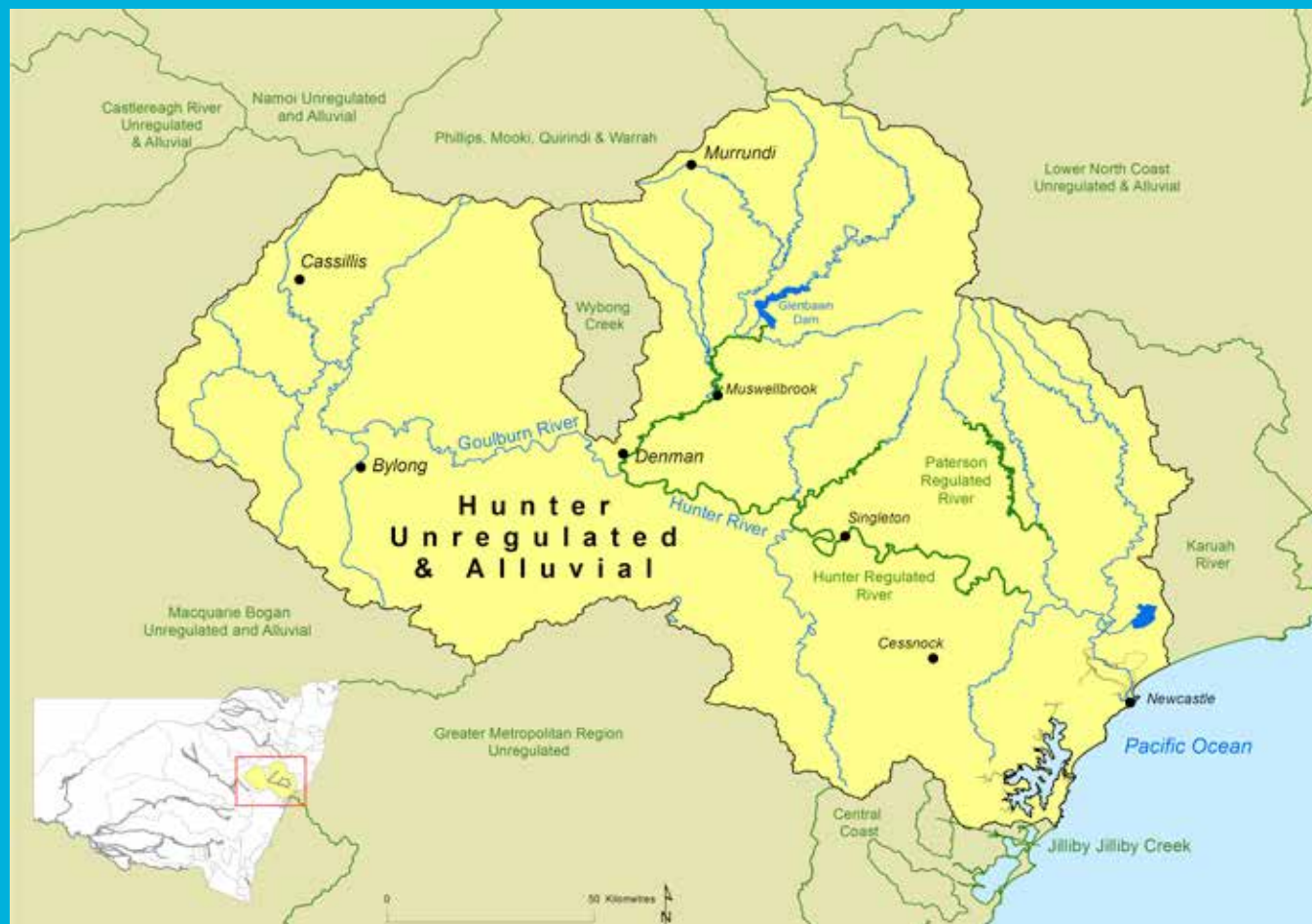
Context

This WSP covers the rivers regulated by Glenbawn and Glennies Creek dams within the Hunter River catchment. The plan is one of five plans that control the overall extraction of water in the Hunter Valley, which has a wide variety of water uses including agriculture, heavy industry and major urban developments. It has one of the highest storage to allocation ratios of any river system in the world, with much of the water reserved for thermal power stations, mining and viticulture that require high levels of reliability. Current water entitlements within the regulated river and extraction by upstream interception, unregulated and groundwater users represent 47 per cent of the mean annual flow at the downstream limit of the plan. During droughts general security users have periods of little or no allocation. The WSP was suspended from December 2006 to February 2009 due to the risk to power generation from droughts in south-eastern Australia.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the regulated surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by 2015.
2. Does the plan include key assessments?	Yes	Key hydrologic, socio-economic and environmental assessments were undertaken as part of plan development and drafting.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It establishes a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information explaining the trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented outcomes and related performance indicators. Some of the plan's ecological objectives are broad and their measurement will require considerable effort. Most of the plan's objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Interception by mining and plantation development were not included in the planning assessment. Several statewide policies guide the management of these intercepting activities.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan that addresses surface water only, with no reference to integrated management arrangements. The more recent WSP for the Hunter Unregulated and Alluvial Water Sources has management arrangements to integrate areas that are highly connected with the regulated river system.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. The plan's environmental water provisions are given effect through conditions on the State Water Corporation's Water Supply Work Approvals. The corporation must report annually on its compliance with these conditions.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Monitoring to assess progress towards the plan's environmental objectives has begun and results from these ecological studies have recently been published. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. Modelling of the potential risk of climate variability to entitlement holders during plan development led to the removal of shelf water and establishment of an environmental contingency allowance to cover potential environmental risks. The plan did not consider climate change, although it does contain some self-adjustment mechanisms.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards the implementation of some plan actions, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Audits of plan-implementation effectiveness publicly report this information. Although some monitoring and research programs have begun, the extent of progress made towards the achievement of environmental and social objectives is not yet clear.

HUNTER UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2009



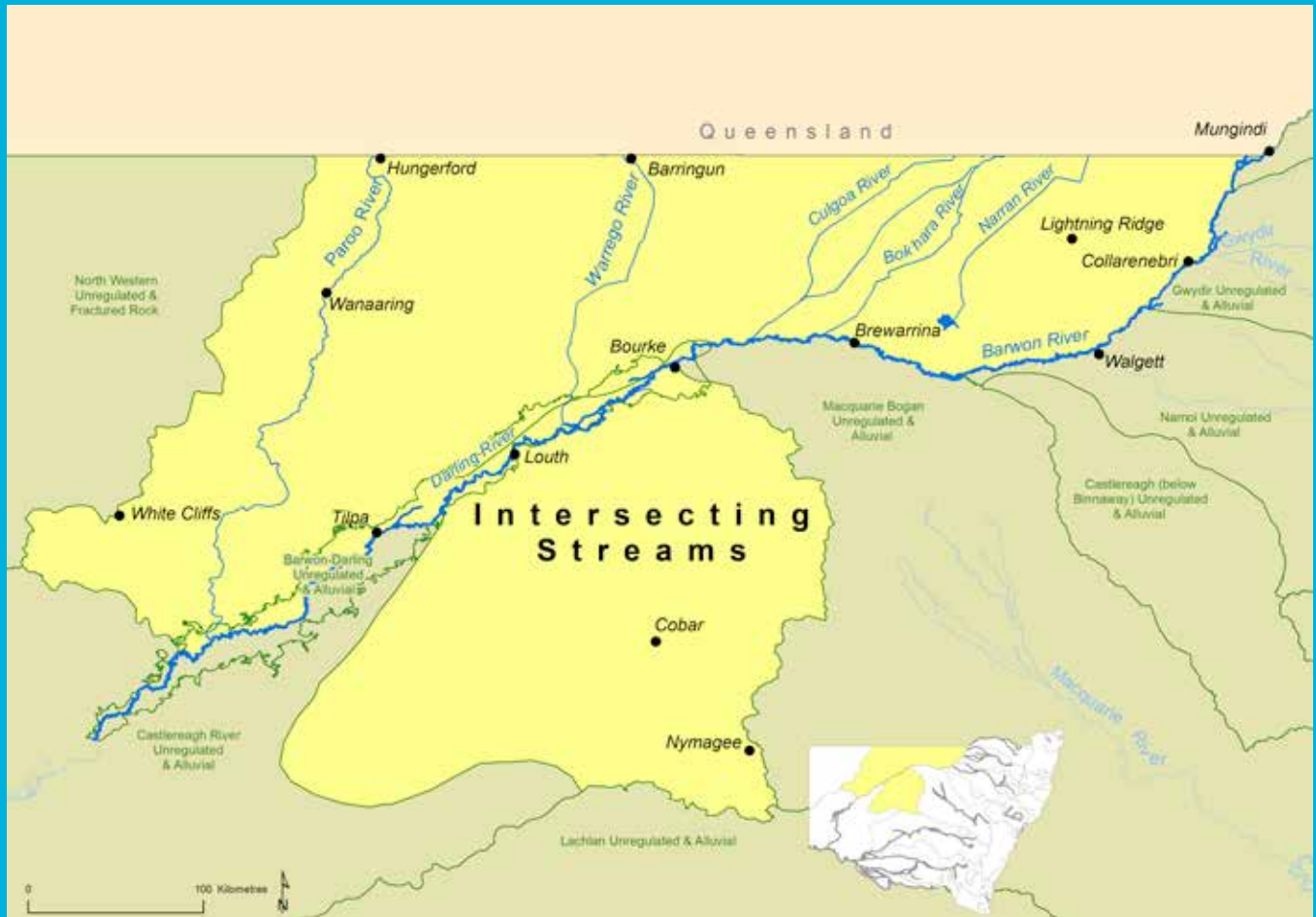
Context

This WSP covers the Hunter River catchment's highly connected alluvial groundwater and unregulated rivers and creeks (excluding Wybong Creek, which is covered by a separate WSP). The plan is one of five plans that control the overall extraction of water in the Hunter Valley. The valley's climate is highly variable, with the area experiencing severe droughts and extensive floods. The valley has a wide variety of water uses including agriculture, heavy industry and major urban developments. Across the plan area, the largest single user from the unregulated rivers is Hunter Water Corporation. Hunter Water provides water and wastewater services to more than half a million people in the Lower Hunter. Other uses include irrigation and mining.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface water and alluvial groundwater within the planning area. The plan commenced in 2009 and applies for 10 years. The Wybong Creek WSP may be merged with this plan when it is remade in 2014. This would result in a single plan covering the unregulated water sources in the catchment.
2. Does the plan include key assessments?	Yes	The key assessments conducted to support the plan's development are summarised in the plan's supporting documentation. The assessments were informed by existing studies, regional expert knowledge and community consultation.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but acknowledges that some management zones are hydrologically stressed during the low flow, peak water demand months. The plan establishes a long-term annual extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes and related performance indicators. Monitoring of plan outcomes will be focused in high-risk water sources.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan considers the impacts from farm dams. The plan's supporting documentation notes that new plantation developments will be monitored and assessed to determine if a water access licence is required. Statewide policies guide the management of mining interception. In March 2013, a plan amendment came into effect that permits large coal mining developments to continue taking water under their aquifer access licences during cease-to-pump conditions.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises alluvial groundwater and surface water connectivity within the planning area and includes appropriate integrated management arrangements, such as in-stream cease-to-pump levels that apply to both surface water and groundwater users, and conditions for new alluvial groundwater bores.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan includes rules-based environmental water provisions expressed as cease-to-pump levels for each water source. The plan allows for these levels to be amended in some water sources where information was inadequate to establish water sharing rules that would fully meet plan objectives. The plan's monitoring arrangements are not clear.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	There is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Some information on the plan's effectiveness in delivering its water dealings and security objectives may be available from various registers that document available water determinations and trade activity. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. The plan was developed using the macro approach, which uses indices for hydrological stress (risk to entitlement security from limits to supply) and risk to in-stream value to determine water sharing rules. As most of the plan's subcatchments have cease-to-pump rules, any potential supply reductions are borne by the water user.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement provided opportunities for all interested parties to contribute to the plan's development and refinement. Stakeholder input is transparently recorded in the plan's supporting documentation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Although progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements), there has been minimal reporting on plan implementation progress or effectiveness in delivering its intended outcomes to date.

INTERSECTING STREAMS UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2011



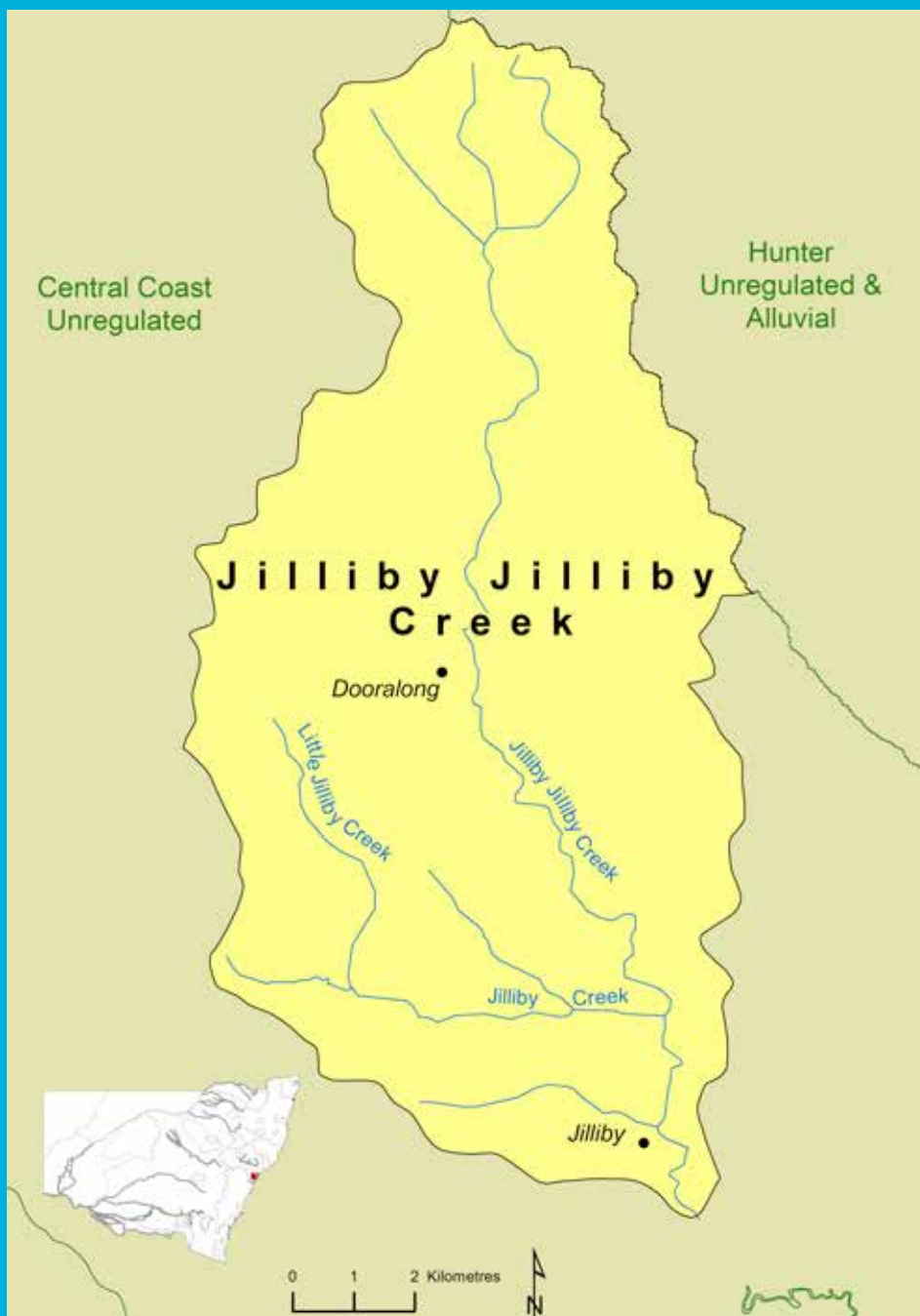
Context

This WSP includes the unregulated Culgoa, Moonie, Narran, Paroo and Warrego rivers and the Paroo and Warrego Alluvial groundwater sources, located in the north of NSW. The Paroo River originates in Queensland and is the last free-flowing river in the northern Murray–Darling Basin. The Paroo River water source supports a significant wetland system and has the largest active complex of artesian mound springs in the state. Townships in the plan area include Lightning Ridge, Enngonia, Hungerford, Wanaaring, White Cliffs and Cobar. Key water management issues centre on the sharing of resources between NSW and Queensland, including the capture and storage of floodwaters by Queensland, and compliance with the Murray–Darling Basin cap.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters and alluvial groundwater within the planning area. The plan commenced in 2011 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Some information has been provided to support the plan, including estimates of recharge and consumptive water use. Much of the detail underpinning these estimates and the risk assessment process were not included in the plan or supporting documents (e.g. condition or water requirements of environmental assets).
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. It does provide the basis for establishing a long-term extraction limit and allows for adjustments to available water determinations if the limit is exceeded. Measurement of water usage for the area is generally lacking.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Although the plan includes clearly identified outcomes linked to strategies and performance indicators, risk assessment and monitoring arrangements are not clearly linked to plan objectives.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. An intergovernmental agreement is required to permit cross-border trade.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Amendments can be made to manage plantation forestry and aquifer interference (e.g. mining). Information on these potential interception activities is not provided, despite forecast increases in the region.
7. Does the plan include/address surface water and groundwater connectivity as appropriate?	To some extent	Although the plan recognises the potential connectivity between surface water and groundwater, areas of connectivity are not identified and the level of connection is not quantified.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements, but little detailed information is presented to underpin them (e.g. studies of current environmental asset condition).
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Targeted consultation was undertaken with stakeholder groups to develop water sharing rules in the draft plan. In some cases, further details are required to provide greater transparency around panel decisions (e.g. condition of environmental assets).
12. Have identified outcomes been achieved during the reporting period?	To some extent	Given the plan has only been operating for two years, there has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

JILLIBY JILLIBY CREEK WATER SOURCE WATER SHARING PLAN 2003



Context

This plan covers surface waters in the Jilliby Jilliby Creek catchment on the central coast of NSW. It is a major tributary of the Wyong River, which flows into Tuggerah Lakes, a large coastal saltwater lake with ecologically important wetlands. Jilliby Jilliby Creek was assessed as being under high hydrological and environmental stress in the 1998 Stressed Rivers Assessment Report. Consumptive water demand during the system's summer low flows is at full allocation. Irrigation uses include that for vegetables, perennial pasture, annual pasture and citrus, while orchards and dairies are being increasingly used for rural residential purposes. Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability is the primary planning driver. Although part of the Tuggerah Lakes catchment, water sharing in Jilliby Jilliby Creek has been managed under a discrete plan, which commenced in 2004.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged with the Central Coast Unregulated Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but does recognise the system as hydrologically stressed. The plan establishes the basis for a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad objectives, strategies and related performance indicators. Monitoring arrangements for measuring plan outcomes are not clearly specified within the plan or its supporting documents. Some of the plan's ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other interception activities, such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan that does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes a cease-to-pump level to protect a portion of low flows, and daily flow-sharing volumes to protect natural medium- to high-flow variability. The environmental water provisions are based on the hydro-ecological assumption that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. The cease-to-pump rule will assign any reductions in supply to water users. There is no quantification of the potential risk to entitlement securities due to long-term climate change, although background material did consider the risks to system health during plan development.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive community engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR), but there is no publicly available assessment of how the plan has performed against its objectives. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

KANGAROO RIVER WATER SOURCE WATER SHARING PLAN 2003



Context

This WSP for the Kangaroo River Water Source covers surface waters in the Kangaroo River catchment on the south coast of NSW. Water sharing in the catchment has been managed under an individual plan despite it being a tributary of the Shoalhaven River. The plan area is drained by three main tributaries: Kangaroo River, Brogers Creek and Barrengarry Creek. The upstream reaches of the water source include parts of Morton and Budderoo national parks. Surface water use is primarily for irrigation, town water supply and domestic and stock purposes. The area is considered hydrologically stressed because of the high consumptive water demand during the system's summer low flows. Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability is the primary planning driver.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Greater Metropolitan Region Unregulated River Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the water management provisions within the plan. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Although the plan does not identify any areas of overuse, the system is considered hydrologically stressed during low-flow periods. The plan establishes a long-term extraction limit and allows for reductions to annual allocations if the extraction limit is exceeded. Information explaining the trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented objectives, strategies and related performance indicators, but monitoring and reporting arrangements for measuring achievement against these is not specific. Most of the plan's objectives are measurable using routinely collected hydrologic parameters, but some ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other potential interception activities, such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not address groundwater and surface water connectivity, despite evidence that suggests groundwater extraction in the upper Kangaroo River affects river baseflows.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. The plan establishes a cease-to-pump level to protect a portion of low flows, and daily flow-sharing volumes to protect natural medium- to high-flow variability.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives is not available, although some socio-economic, environmental and flow monitoring is occurring. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not explicitly deal with climate change; rather it assumes that the in-built review will provide sufficient adaptive capacity. There are some self-adjustment mechanisms for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR), but there is no publicly available assessment of how the plan has performed against its objectives. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

KARUAH RIVER WATER SOURCE WATER SHARING PLAN 2003



Context

The Karuah River is located on the lower north coast of NSW. The Karuah catchment has high conservation values and contains large areas of state forest, national park, coastal wetland and minimally disturbed waterways. Surface water use is primarily for irrigation, town water supply and domestic and stock purposes. The area is considered hydrologically stressed because of the high consumptive water demand during the system's summer low flows. Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability and protection of conservation values are the primary planning drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Lower North Coast Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Although the plan does not identify any areas of overuse, the system is considered hydrologically stressed during low-flow periods. The plan establishes a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented objectives, strategies and related performance indicators, but monitoring and reporting arrangements for measuring achievement against these is not specific. Most of the plan's objectives are measurable using routinely collected hydrologic parameters, but some ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of mining interception. The possible interception impacts of plantation forestry have not been considered despite the existence of large areas of state forest and other agro-forestry operations in the planning area.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not address groundwater and surface water connectivity.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes a cease-to-pump level to protect a portion of low flows, and daily flow-sharing volumes to protect natural medium- to high-flow variability. The environmental water provisions are based on the hydro-ecological assumption that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not explicitly deal with climate change; rather it assumes that the in-built review cycle will provide sufficient adaptive capacity. There are some self-adjustment mechanisms for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive community engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR, verifying the very-low-flow provision maintains flow continuity), but there is no publicly available assessment of how the plan has performed against its objectives overall. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

KULNURA MANGROVE MOUNTAIN GROUNDWATER SOURCES WATER SHARING PLAN 2003



Context

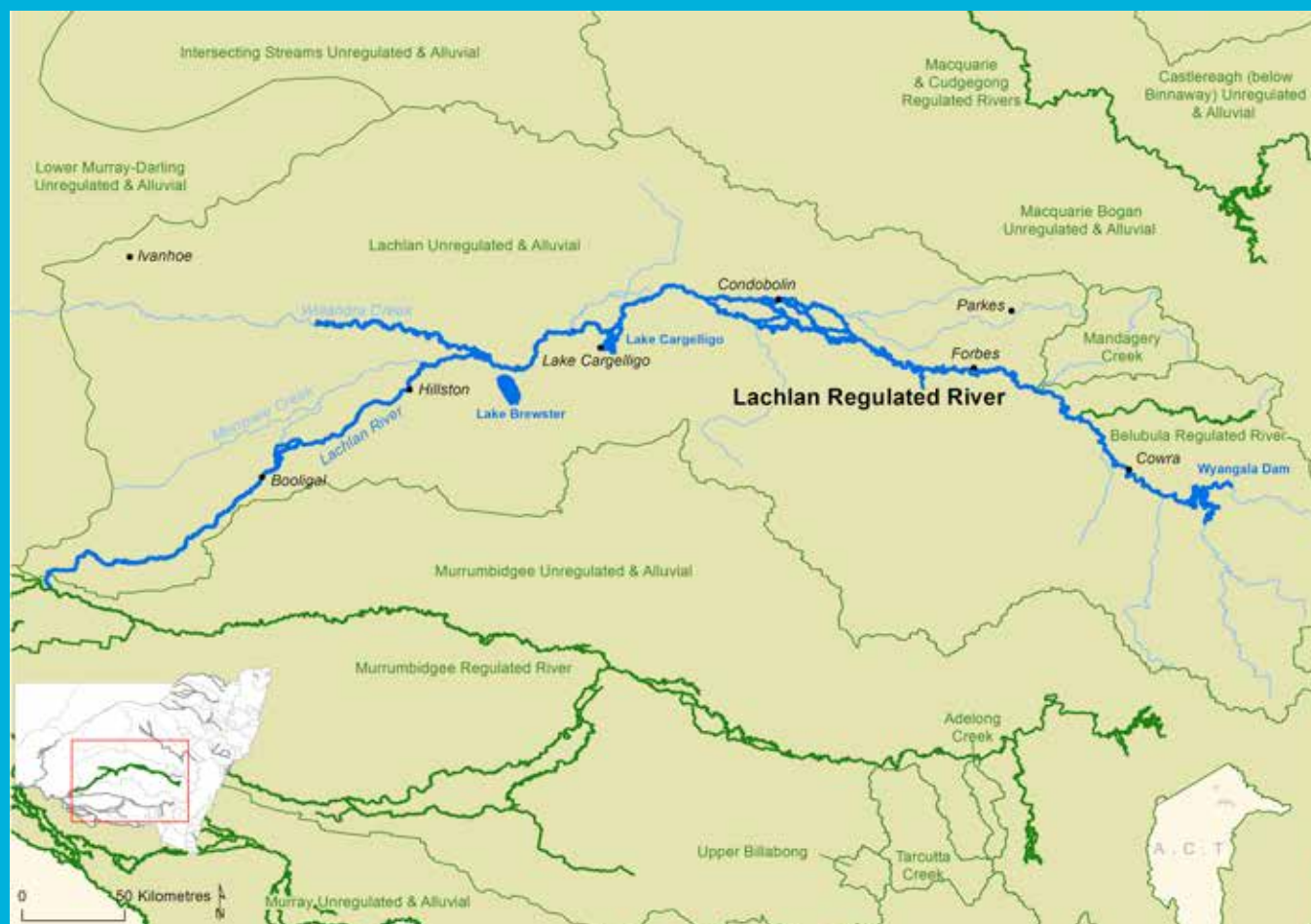
The Kulnura Mangrove Mountain Groundwater Sources are located north of Sydney and inland from Gosford. The plan separates the groundwater resources into eight management zones, which occur in both porous layers and fractured zones. The groundwater resources provide important baseflows to rivers and support several groundwater-dependent ecosystems (wetlands, heath scrub and woodland areas, aquifer and cave ecosystems). About 40 per cent of the planning area consists of national park and state forests, while about 10 per cent is a drinking water reserve. The Kulnura Mangrove Mountain Groundwater Sources were assessed by the 1998 Aquifer Risk Assessment Report to be one of 17 NSW coastal aquifers at highest risk of over-extraction and contamination. Groundwater is primarily used for domestic and stock, and irrigation purposes.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers groundwater sources within the planning area. The plan, which applies for 10 years, was amended in 2013. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the North Coast Fractured and Porous Rock Groundwater WSP being developed at present.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The Kulnura Mangrove Mountain Groundwater Sources are considered at risk of over-extraction. The plan includes management arrangements that aim to prevent further hydrological stress, including the establishment of a long-term extraction limit for each of its eight groundwater management zones. The plan's environmental water provisions can be amended based on further scientific studies of GDE and baseflow dependence on groundwater inflows.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented outcomes and strategies that are intended to protect aquifer water quality and nearby GDEs, while maintaining the aquifer as a safe urban water supply. Monitoring and reporting arrangements are not specific.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of forestry and mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan manages the sharing of groundwater resources within the planning area. It recognises groundwater/surface water connectivity between the Ourimbah groundwater source and Ourimbah Creek and management arrangements have been established to protect groundwater baseflow contributions to Ourimbah Creek.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental watering arrangements that aim to deliver the plan's environmental objectives. The plan acknowledges that the arrangements are based on a limited understanding of environmental water requirements and allows for amendments to its provisions based on further scientific studies.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Aquifer water quality and water-level monitoring has begun and studies to assess the plan's socio-economic impact were completed in 2006 and 2010. Monitoring of consumptive water use to assess entitlement holder compliance has not been introduced. Some planned environmental water and long-term average annual extraction limit provisions within the plan were amended in 2013 based on new scientific information. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not explicitly address climate change; rather it assumes that the in-built review will provide sufficient adaptive capacity. There are some self-adjustment mechanisms for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of planned environmental water). Metering of volumes extracted by water users has not been introduced and therefore it has not been possible to implement some plan provisions (e.g. assessment of long-term average annual extractions against the plan limits, implementing the full range of trading rules). Environmental water requirements for each groundwater management zone have been reassessed based on new GDE research and hydrological modelling. The environmental water provision has been increased in six of the eight management zones in light of this new research. Audits of plan-implementation effectiveness publicly report this information.

LACHLAN REGULATED RIVER WATER SOURCE WATER SHARING PLAN 2003



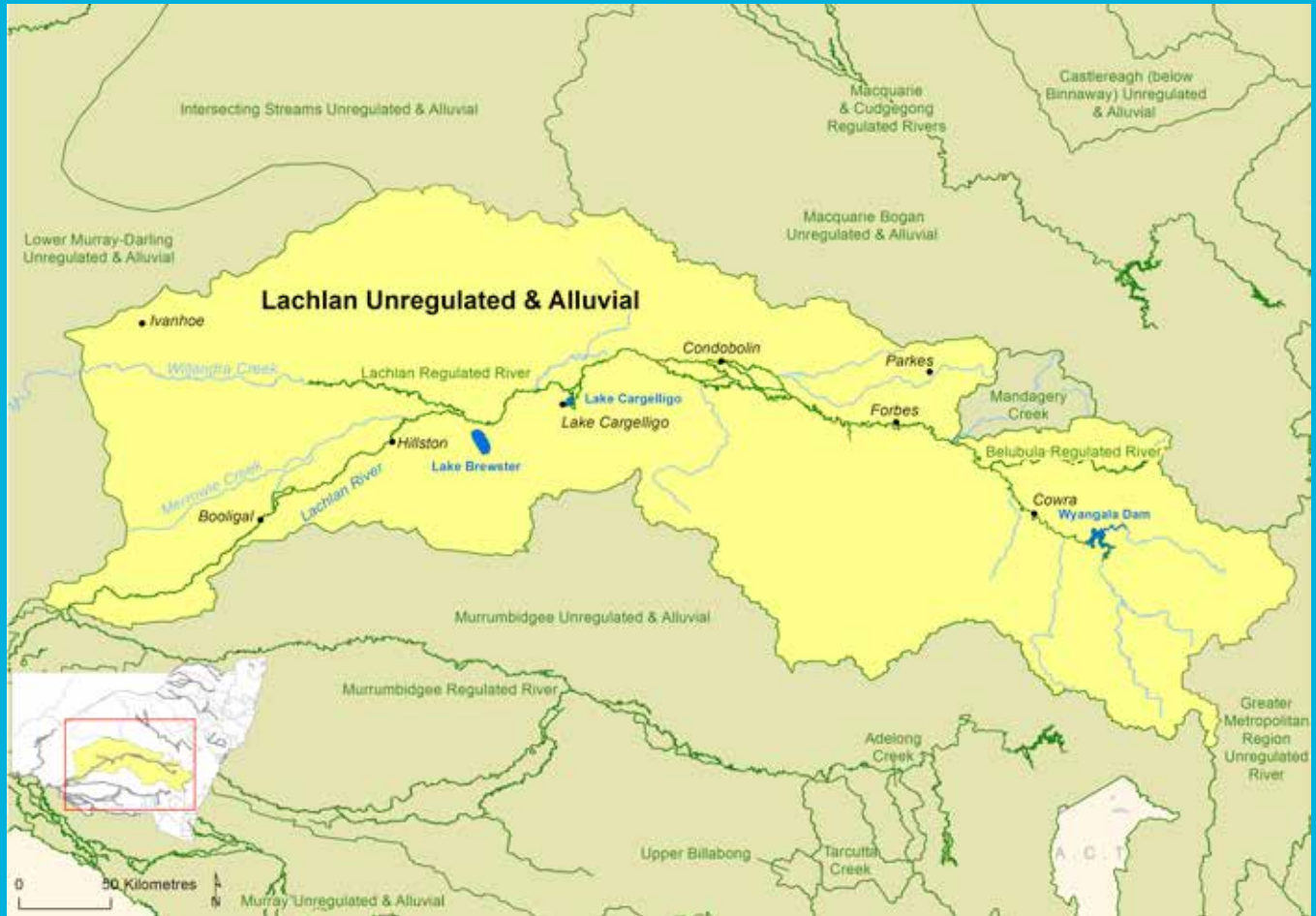
Context

The Lachlan River begins in the Great Dividing Range and flows to its junction with the Murrumbidgee River only during large floods, which generally terminate at the Great Cumbung Swamp. The Lachlan River's tributaries include the Belubula, Abercrombie, Crookwell and Boorowa rivers and Mandagery Creek (although a separate WSP covers Mandagery Creek). Wyangala Dam regulates the river and Lake Cargelligo and Lake Brewster have been modified for use as storages. Land use is dominated by livestock grazing but irrigated agriculture occurs along the length of the Lachlan River. The main irrigated crops include cereals, lucerne and cotton. Irrigation for oilseeds, vegetables, wine grapes and stone fruits also occurs. Wetlands are a common feature of the catchment downstream of Forbes. Due to severe water shortages the WSP for the Lachlan Regulated River was suspended from 1 July 2004 until 16 August 2011.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the regulated surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by 2015.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the plan's water management provisions. This information is no longer publically available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information on the environmental and consumptive use trade-offs that underpin the extraction limit is no longer publicly available.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies outcomes that are linked to plan provisions, but monitoring and reporting arrangements are not clearly detailed. Some objectives do not have clear strategies (e.g. protection of cultural and spiritual values).
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of floodplain harvesting, forestry and mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	This plan is a single resource plan and provides little information on the potential connectivity between surface water and groundwater. Areas of connectivity are not identified or quantified in the plan, but links to the Mandagery Creek Water Source WSP are made.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan links environmental water provisions to objectives, and responsibility for their delivery has been assigned. Environmental water in the plan takes the form of translucency releases, water above the extraction limit, environmental contingency allowances, a water quality allowance and replenishment flows. Environmental water provisions are given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Data collection to assess progress towards the plan's objectives has begun, with results from specific studies and ongoing monitoring recently published. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risk to system health or entitlement security due to long-term climate change. There is some self-adjustment for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards the implementation of some plan actions, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Audits of plan-implementation effectiveness publicly report this information.

LACHLAN UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



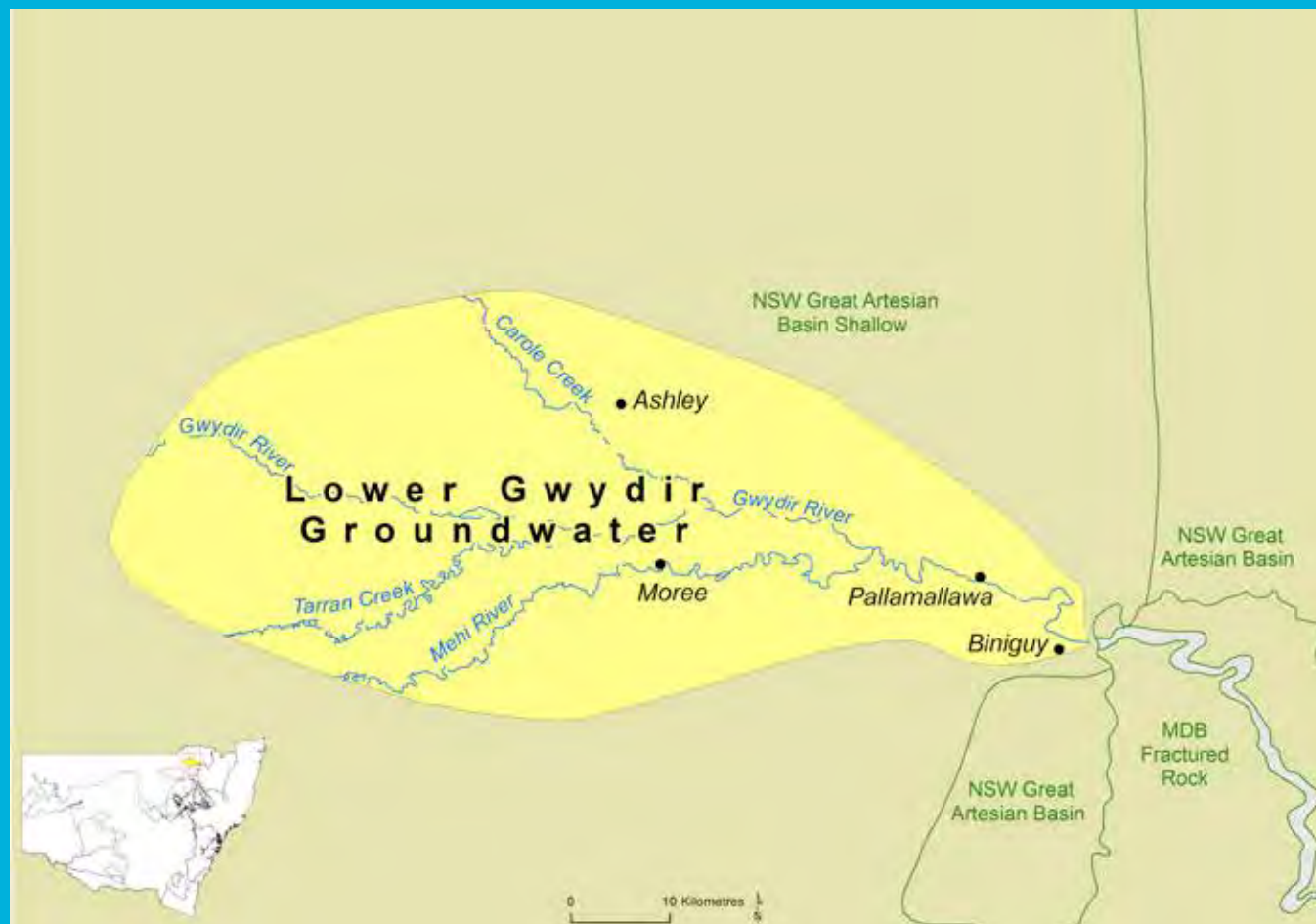
Context

This plan applies to 22 unregulated water sources and two alluvial groundwater sources, all of which are located within the Lachlan catchment in the Murray–Darling Basin. The plan area includes the major towns of Cowra, Young, Parkes, Forbes, Hillston and Condobolin. The catchment has areas of significant aquatic ecological value including nine wetlands listed in the Directory of Important Wetlands in Australia, and habitat for several native fish species and threatened species. The predominant land use is livestock grazing and dryland cropping. Irrigated land covers a small percentage of the plan area and supports pasture, cereals, oil seeds, vegetables, wine grapes and stone fruit. Gold and copper mining are also important land uses in the catchment.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers unregulated surface waters and alluvial groundwater within the planning area. The plan commenced in 2012 and applies for 10 years.
2. Does the plan include key assessments?	Yes	The plan was developed using the macro approach that requires risk assessments for in-stream value, economic value and community dependence on water extraction. These risk assessments were further informed by local studies and information from local sources, in addition to the targeted and broad consultation processes.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan establishes a LTAAEL and rules to manage extraction within the limit. Although the plan does not identify overallocation, existing groundwater entitlements exceed the plan's LTAAEL.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Although the plan details objectives, strategies and performance indicators, which can be assessed over the plan's life, it does not identify specific monitoring arrangements.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan identified known interception activities at the time the plan commenced and made allowances for them over the plan's life. It requires water access licences for farm dams that exceed the maximum harvestable right. The plan does not specify monitoring requirements for interception activities.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan conjunctively manages water resources from 22 unregulated river sources and the two alluvial groundwater sources. The plan identifies that the groundwater source is highly connected to the Belubula River regulated source, managed by a separate WSP, and the plan manages this connectivity through annual available determinations – as per state policy.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan contains clear arrangements (licensing arrangements, distance restrictions, LTAAEL and cease-to-pump rules for flow classes) that were designed to protect environmental values in the different water sources. The plan does not specify monitoring arrangements.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although the plan does not specify arrangements, monitoring is taking place and reports for several purposes and by several agencies are prepared and published.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges risk to the availability of the resource due to climatic variability. The plan includes mechanisms that indirectly allow for climatic variability such as the extraction limit and the cease-to-pump rules. The adaptive management approach allows for plan amendments when new information becomes available.
11. Is stakeholder engagement in the planning process adequate?	Yes	The stakeholder engagement process followed the macro approach. It comprised targeted consultation and a public exhibition. There was consultation with numerous groups to provide feedback and refine plan rules.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is less than two years old and hence no reporting against plan outcomes has occurred as yet. It is unclear whether sufficient monitoring arrangements are in place to enable assessment against the plan's performance indicators. There is some monitoring to enable reporting against statewide targets on the condition of groundwater and riverine ecosystems. Some monitoring of socio-economic aspects is also being undertaken, but at a catchment rather than plan area level.

LOWER GWYDIR GROUNDWATER SOURCE WATER SHARING PLAN 2003



Context

The Lower Gwydir Groundwater Source plan area is within the Murray–Darling Basin in north-western NSW. Groundwater quality is generally high, with water uses in the plan area including irrigation and supply for industrial, domestic and stock purposes, as well as town water. Ongoing high demand for water has resulted in the area being identified as one of the most at-risk groundwater resources in the state. The Lower Gwydir Groundwater Sources were included in the Achieving Sustainable Groundwater Entitlements program funded by the NSW and Australian governments. Although these alluvial sediments are associated with the Gwydir and Mehi rivers, the surface water and groundwater are managed under separate WSPs.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the Lower Gwydir Groundwater Source. It commenced in 2006 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	The Aquifer Risk Assessment Report (1998) classified these groundwater sources as highest risk. Assessments of extraction volumes and the socio-economic importance of this water source were undertaken as part of plan development, but no information on GDEs was provided. Knowledge of GDEs remains limited within the Gwydir region, but work has begun to address information gaps.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan acknowledges that this groundwater source is overallocated. It establishes a long-term extraction limit and reduces entitlements over the plan's life. The plan also allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes broad outcomes which are generally linked to plan provisions. Specific arrangements for monitoring the plan's effectiveness in achieving all outcomes have not been clearly articulated. Ecological and cultural objectives are general and will require considerable monitoring investment to measure their achievement, but trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. As allowed by the plan, further restrictions have been introduced over the term of the plan to limit negative impacts – specifically drawdown – as a result of ongoing assessments documented in the five-year audit.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other interception activities, such as mining and forestry.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Although connectivity is recognised in the underpinning hydrological model, the plan is a single resource plan and the extent to which provisions address potential connectivity between surface water and groundwater is unclear.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. Environmental assets and their water requirements are not clearly detailed and monitoring is not a clearly embedded component of the plan or supporting documents. Knowledge of GDEs remains limited within the Gwydir region, but work has begun to address information gaps.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Groundwater usage, levels and quality are being monitored and some socio-economic data has been collected. Ongoing monitoring is guiding amendments/refinements to plan rules (e.g. distance restrictions, dealing rules). Minimal information is available on the achievement of ecological or cultural outcomes, or progress towards these.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability, and historical climate data informed the establishment of extraction limits. The plan does not explicitly deal with climate change; rather it assumes the in-built review will provide sufficient adaptive capacity.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Stakeholder engagement occurred during plan development and drafting through the local Gwydir Groundwater Management Committee (e.g. targeted consultation in plan development, public exhibition of draft plan). Information explaining the final decision-making process is not publicly available. The five-year audit report contains evidence that changes have been implemented during the term of the plan facilitated through stakeholder consultation.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards implementation of plan strategies, such as the provision of tradeable water entitlements and BLR. The status report identifies drawdowns of up to 40 per cent of saturated thickness of the alluvium in some areas, which are also showing recovery decline. Trade restrictions were proposed as a result of the levels of impact occurring.

LOWER LACHLAN GROUNDWATER SOURCE WATER SHARING PLAN 2003



Context

The plan area is located within the Lachlan catchment in central NSW. This groundwater source includes an upper unconfined aquifer and two lower confined aquifers. Recharge comes from rainfall, leakage from river and creeks, inundation from flooding and deep drainage from irrigation. Discharge occurs naturally and through groundwater pumping from all three layers. A large irrigation area near Hillston relies on groundwater for the production of citrus and vegetable crops. Ongoing high demand for water has resulted in the area being identified as at-risk and it was included in the Achieving Sustainable Groundwater Entitlements program funded by the NSW and Australian governments. Although this groundwater source receives recharge directly from the Lachlan River, the surface waters are managed under a separate plan – the WSP for the Lachlan Regulated River Water Source.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A statutory plan was developed and gazetted in 2003 but commenced in 2008, with an amended recharge estimate following a scientific review. The plan applies until 2018.
2. Does the plan include key assessments?	To some extent	Key assessments of extraction volumes and the socio-economic importance of this water source were undertaken at the time of plan development, but no information on environmental water requirements of GDEs was provided. The NRC reviewed the hydrological assessment in 2006 and the extraction limit was amended before plan commencement.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan acknowledges that this groundwater source is overallocated. It establishes a long-term extraction limit and reduces entitlements over the plan's life. The plan also allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes, the achievement of which may be difficult to measure. The plan does link objectives to provisions but monitoring arrangements are not detailed. Risk monitoring of salinity is to be implemented from the sixth year of the plan.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other interception activities, such as mining and forestry.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Although connectivity is recognised in the underpinning hydrological model, the plan is a single resource plan and the extent to which provisions address potential connectivity between surface water and groundwater is unclear. GDEs are still to be identified.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	There is a lack of information on environmental assets and their water requirements. No GDEs have been identified. Monitoring to assess environmental outcomes is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some monitoring of groundwater levels is occurring, but the specific arrangements for monitoring have not been clearly described. A progress report on WSPs in the Lachlan Valley was published in 2012. NOW advises that the five-year audit of plan implementation is underway. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Stakeholder engagement occurred during plan development and drafting (e.g. targeted consultation in plan development, public exhibition of draft plan). Information explaining the final decision-making process is not publicly available. Consultative groups are required to be established to amend the recharge estimates or include provisions for GDE environmental water.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards implementation of some plan actions, such as the provision of tradeable water entitlements and establishment of monitoring bores. The salinity risk monitoring strategy is yet to be developed and significant information gaps still exist (e.g. identification of GDEs).

LOWER MACQUARIE GROUNDWATER SOURCES WATER SHARING PLAN 2003



Context

This WSP covers six groundwater sources or zones in the Lower Macquarie catchment that lie within the Murray–Darling Basin and include the main high-yielding aquifers north-west of Narromine. This groundwater is an important resource for irrigation, stock and domestic use and town water supplies in the Macquarie Valley. Ongoing high demand for water has resulted in the area being identified as one of the most at-risk groundwater resources in the state. The Lower Macquarie Groundwater Sources were included in the Achieving Sustainable Groundwater Entitlements program funded by the NSW and Australian governments. The Lower Macquarie Groundwater Sources WSP commenced in 2006.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the Lower Macquarie Groundwater Sources. It commenced in 2006 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	A local water management committee undertook some key assessments as part of plan development and drafting. Public documentation of this process has been limited (e.g. environmental asset condition, cultural values, connectivity). Assessment of the existing entitlement levels for the Lower Macquarie identified it as one of the most at-risk groundwater sources in the state.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan acknowledges that this groundwater source is overallocated. It establishes a long-term extraction limit and reduces entitlements over the plan's life. The plan also allows for adjustments to available water determinations if the extraction limit is exceeded. Users within zone 4 agreed to link extraction to groundwater-level triggers, and these have been set in licence conditions.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes broad outcomes that are generally linked to plan provisions. Specific arrangements for monitoring the plan's effectiveness in achieving outcomes have not been clearly articulated. Ecological and cultural objectives are general and will require considerable monitoring investment to measure. Trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other potential interception activities, such as mining and forestry.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	This plan is a single resource plan and provides little information on the potential connectivity between surface water and groundwater. Modelling work is underway to assess the current recharge estimates and to identify GDEs.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements and responsibility for their provision has been assigned. Environmental assets and their water requirements are not clearly detailed and monitoring is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	While groundwater levels and quality are being monitored and some socio-economic data is being collected, reporting is limited. Minimal information is available on the achievement of ecological or cultural outcomes, or progress towards these (noting that no GDEs have been identified to date). The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability, and historical climate data informed the establishment of extraction limits. There is no quantification of the potential risk to system health or entitlement security due to long-term climate change. There is some self-adjustment for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement occurred during plan development and drafting through the local Macquarie Groundwater Management Committee (e.g. targeted consultation in plan development, public exhibition of draft plan). The five-year audit report contains evidence that changes have been implemented during the term of the plan facilitated through stakeholder consultation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. tradeable water entitlements, provision of BLR). Groundwater quality continues to be at risk and knowledge of GDEs remains poor.

LOWER MURRAY GROUNDWATER SOURCE WATER SHARING PLAN 2006



Context

The Lower Murray Groundwater Source WSP applies to water in the unconsolidated alluvial aquifers of the Calivil and Renmark Formations, and the deeper Shepparton Formation. The plan area extends downstream from Corowa in the east to the confluence of the Wakool and Murray River in the west. This groundwater has been intensively pumped for irrigation, as well as industrial, recreational and town water supplies in the past – resulting in it being identified as one of the most at-risk groundwater resources in NSW. The Lower Murray Groundwater Sources were included in the Achieving Sustainable Groundwater Entitlements program funded by the NSW and Australian governments.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the Lower Murray Groundwater Sources. It commenced in 2006 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Some assessment of current extraction volumes and the socio-economic importance of this water source has been undertaken, but no information on environmental water requirements or GDEs was provided. The Aquifer Risk Assessment Report (1998) assessed these groundwater sources as highest risk.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan acknowledges that this groundwater source is overallocated. It establishes a long-term extraction limit and reduces entitlements over the plan's life. The plan also allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes broad outcomes which are generally linked to plan provisions. Specific arrangements for monitoring the plan's effectiveness in achieving all outcomes have not been clearly articulated. Ecological and cultural objectives are general and will require considerable monitoring investment to measure their achievement, but trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of potential interception activities, such as mining and forestry.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	This plan is a single resource plan and provides little information on the potential interconnectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	There is a lack of information on environmental assets and their water requirements, but the plan outlines environmental watering arrangements and responsibility for their delivery has been assigned. Monitoring to assess environmental outcomes is not a clearly embedded component of the plan.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Comprehensive routine groundwater monitoring is occurring (e.g. water quality) and some socio-economic data is being collected. The Aboriginal Water Initiative is expected to contribute towards cultural outcomes. There is no information on ecological outcomes because no GDEs have been identified. The plan and its supporting legislative framework provide comprehensive compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement occurred during plan development and drafting through the local Murray Groundwater Management Committee (e.g. targeted consultation in plan development and public exhibition). The five-year audit report contains evidence that changes have been implemented during the term of the plan facilitated through stakeholder consultation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress is being made towards most of the intended outcomes. Progress is less clear against Aboriginal cultural objectives. There are no known GDEs.

LOWER MURRAY SHALLOW GROUNDWATER SOURCE WATER SHARING PLAN 2012



Context

The plan applies to the Lower Murray shallow groundwater source to a depth of 12 m. This is the uppermost part of the Shepparton Formation aquifer, and overlies the Lower Murray Groundwater Source WSP. It is located in the Murray catchment within the Murray–Darling Basin. The groundwater resource is divided into two management zones to reflect distinct water quality (salinity) characteristics. Most bores that tap the shallow groundwater resource are for irrigation purposes. Shallow groundwater pumping was promoted in the mid-1990s to control shallow watertables through ‘unrestricted use’ licences. This practice was discontinued in the early 2000s and the conversion to volumetric limits to limit impact on the deep aquifers was completed by 2010. Murray Irrigation operates the Wakool–Tullakool subsurface drainage scheme to control rising watertables in the area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan commenced in 2012 and is due for extension or replacement in 2022. Several publicly available reports document the macro approach to development of WSPs that apply to aquifers where there is less intensive water use.
2. Does the plan include key assessments?	Yes	The plan was developed using the macro approach that requires assessments of aquifer risk, economic value and community dependence on water extraction. These assessments were further informed by local studies and information from local sources, in addition to the consultation process.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan area is at full allocation. The plan does not identify scope for additional licences unless they are for Aboriginal cultural purposes, town water supply or salinity/watertable control. The plan permits exceeding the LTAAEL above specified thresholds over rolling five-year periods.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Although the plan details objectives, strategies and performance indicators, which can be assessed over the plan's life, it does not identify monitoring arrangements. The plan contributes to statewide targets and this contribution is reported in accordance with the NSW MER framework for natural resource management. NOW is in the process of developing a MER framework tailored to water plans.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan identified BLR as the main intercepting activity known at the time the plan commenced and made allowances for it in the extraction limit. The plan does not specify monitoring requirements for interception activities. Mining and other extractive industries are licensed activities managed through the Aquifer Interference policy and are subject to plan conditions (extraction limit and GDE distance restrictions).
7. Does the plan include/address surface water and groundwater connectivity as appropriate?	Yes	The groundwater source is 'less highly connected' to surface water and, as per the statewide approach for such sources, managed separately. There is connectivity with adjacent aquifers and this connectivity is accounted for through recharge estimates.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan contains clear arrangements (LTAAEL, licensing arrangements and distance restrictions) that were designed to protect environmental values, though none were known at the start of the plan. NOW is responsible for ensuring compliance with the plan rules. Work is needed to identify and prioritise environmental and cultural assets, which may require amendments to environmental rules.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although the plan does not specify monitoring arrangements, there is monitoring taking place and reports for several purposes and by several agencies are prepared and published. NOW is in the process of developing a risk-based strategy to improve MER to assess the effectiveness and performance of plans against their key performance indicators.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan indirectly accounts for climatic variability by managing extraction within the extraction limit. Climate change by 2030 is expected to have only a very small impact. Unexpected changes in water availability can be dealt with through provisions for temporary water restrictions under the WMA 2000. The adaptive management approach allows for plan amendments when new information becomes available during the plan's life.
11. Is stakeholder engagement in the planning process adequate?	To some extent	As per the requirements of the macro approach for groundwater systems, there is evidence of targeted consultation and public exhibition processes. There is no publicly available record of the issues raised and how they were resolved.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is less than two years old and hence no reporting against plan outcomes has occurred as yet. It is unclear whether sufficient monitoring arrangements are in place to enable assessment against the plan's performance indicators. There is some monitoring to enable reporting against statewide targets on the condition of groundwater. Some monitoring of socio-economic aspects is also occurring, but at a regional rather than plan area level.

LOWER MURRAY–DARLING UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



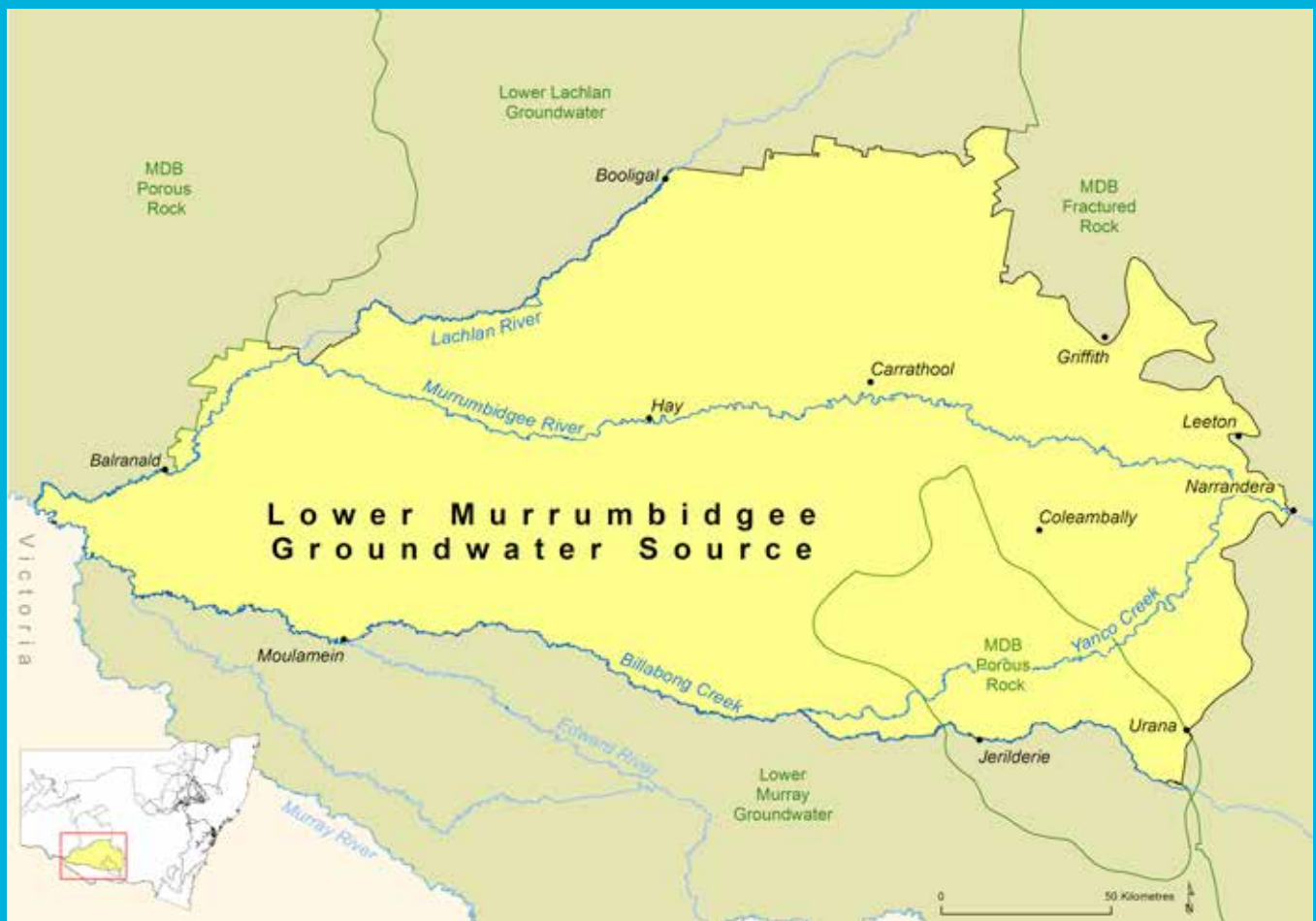
Context

This WSP covers one unregulated surface water source and one alluvial groundwater source in the south-west of NSW. The plan area includes unregulated surface waters in the Lower Darling catchment, including the Great Darling Anabranch, as well as in the Murray River from its confluence with the Murrumbidgee River to the South Australian border. The Lower Darling Alluvial Groundwater Source associated with the Darling River has been categorised as 'less highly connected' but excessive extraction from the freshwater lenses of the alluvium has been identified as a risk to water quality in the river. Consumptive water use in the plan area includes irrigation, industrial purposes, and stock and domestic water use. Little information is available on the environmental assets of the region, such as Thegoa Lagoon.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters and alluvial groundwater within the planning area. The plan commenced in 2012 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Several key assessments have been conducted to support the plan's development including estimates of consumptive use and the establishment of a long-term extraction limit. Some of the detail underpinning these estimates and the risk assessment process were not provided in the plan or supporting documents (e.g. condition of environmental assets, empirical evidence of environmental water requirements, social or cultural values of water resources).
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and provision for reductions to allocations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specific. Ecological and cultural objectives are broad and their measurement will require considerable monitoring effort. Flow and entitlement objectives are likely to be measurable using routinely collected hydrologic and trade parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. The plan may be amended to manage interception impacts from plantations and aquifer interference (mining), but this potential demand is unquantified. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan does recognise the connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements but there is little detailed information presented to underpin them (e.g. current environmental asset condition or water requirements). The specific arrangements for monitoring plan effectiveness in achieving environmental outcomes have not been clearly articulated.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests that a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The stakeholder engagement process provided opportunities for input and advice from interested parties during the plan's development. The information used to determine some of the initial water source classifications and indicative water access and trading rules is not publicly available (e.g. condition and water requirements of environmental assets).
12. Have identified outcomes been achieved during the reporting period?	Not applicable	As the plan has only been operational for a year, there has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

LOWER MURRUMBIDGEE GROUNDWATER SOURCES WATER SHARING PLAN 2003



Context

The Lower Murrumbidgee Groundwater Sources are located in southern NSW, extending in the south to Jerilderie and in the north to Griffith, and following the Lachlan River downstream to its confluence with the Murrumbidgee River, then to its junction with the Murray River. Groundwater extraction for stock supplies dates back to the early 1900s, while deeper bores were sunk for irrigation in the late 1960s. Ongoing high demand for water has resulted in the area being identified as one of the most at-risk groundwater resources in NSW. The Lower Murrumbidgee Groundwater Sources were included in the Achieving Sustainable Groundwater Entitlements program funded by the NSW and Australian governments.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the Lower Murrumbidgee Groundwater Sources. It commenced in 2006 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Some assessments of current extraction volumes and the socio-economic importance of this water source have been undertaken, but no information on environmental water requirements and GDEs was provided. These groundwater sources were considered at serious risk and were included in the Achieving Sustainable Groundwater Entitlements program.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan acknowledges that this groundwater source is overallocated. It establishes a long-term extraction limit and reduces entitlements over the plan's life. The plan also allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes broad outcomes that are generally linked to plan provisions. Specific arrangements for monitoring of plan effectiveness in achieving all outcomes have not been clearly articulated. Environmental objectives are general and will require considerable monitoring investment to measure their achievement, but trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other potential interception activities, such as mining and forestry.
7. Does the plan include/address surface water and groundwater connectivity as appropriate?	To some extent	This plan is a single resource plan. Its rules were developed on the basis of a groundwater model that accounted for surface/groundwater connectivity, as well as connectivity with neighbouring groundwater resources. Relevant surface water plans have management rules that account for the connectivity with the groundwater sources in this plan.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements, the basis for which is unclear. These rely on ensuring that water reserved for the environment is not extracted, as well as distance restrictions for new or replacement bores.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Comprehensive routine groundwater monitoring is occurring (e.g. water quality), and some socio-economic data is being collected. There is recognition of significant knowledge gaps in relation to the location, condition and water requirements of GDEs. The Aboriginal Water Initiative is expected to contribute towards cultural outcomes. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement occurred during the plan's development through targeted consultation and public exhibition processes. The five-year audit report contains evidence that changes have been implemented during the term of the plan facilitated through stakeholder consultation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress is being made towards most of the intended outcomes, but progress is less clear against Aboriginal cultural objectives and protection of GDEs.

LOWER NORTH COAST UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2009



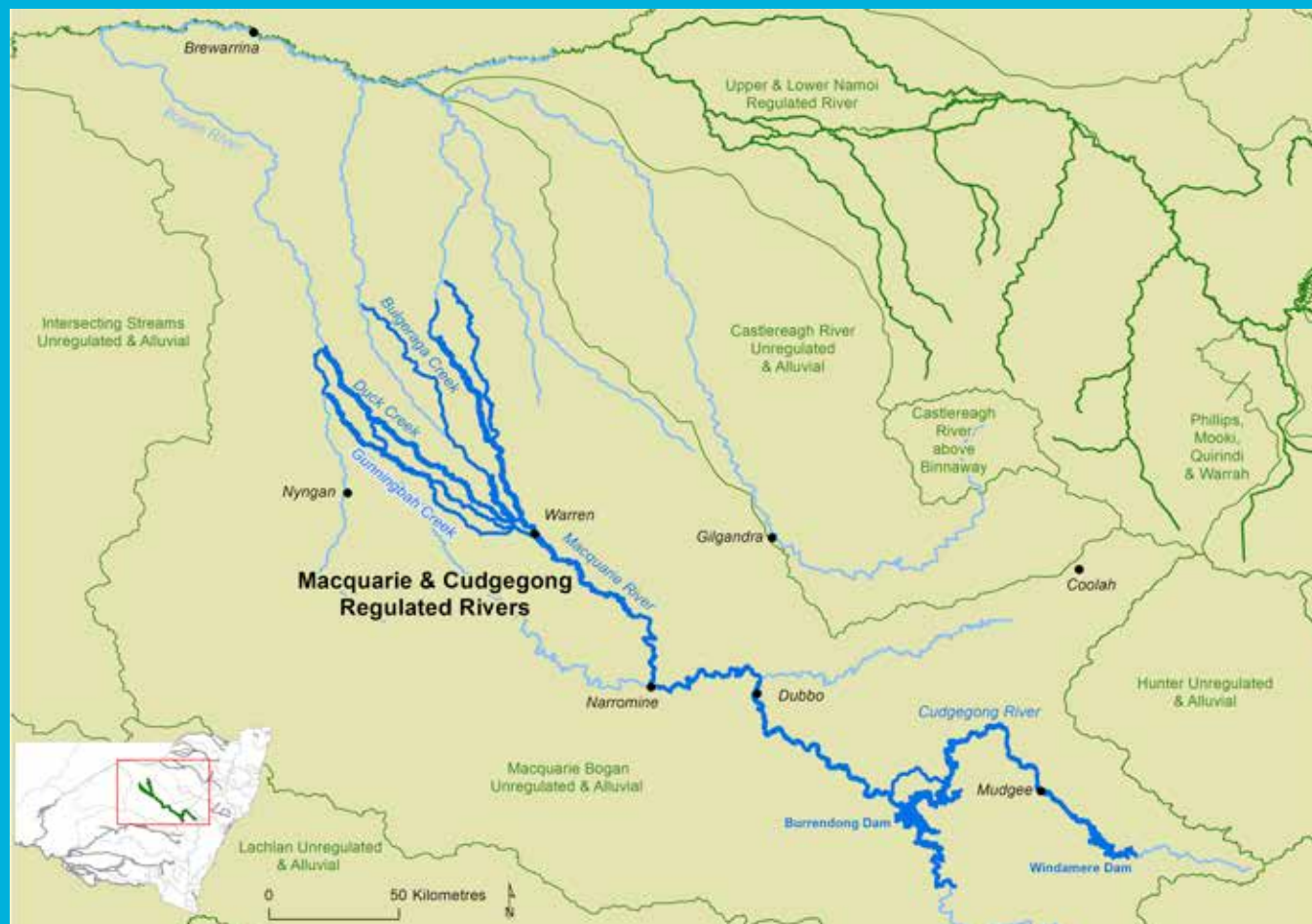
Context

The plan area is located at the southern end of the mid north coast of NSW bounded by the Hastings River Basin to the north, and the Hunter Valley to the south and west. Seventeen water sources were identified as having high in-stream values; many of these are sensitive to either high or low inflows and are valued as water sources for extraction. Significant industries in the area include oyster farming, forestry, fisheries, beef and dairy production, tourism, manufacturing and gravel quarries. The plan includes the lower north coast unregulated rivers, the highly connected alluvial groundwater, and the tidal pool areas not previously covered by the *Water Act 1912*. This plan excludes the Karuah River because a separate WSP had already commenced in 2004. The two plans will operate in parallel until the Karuah WSP ceases in 2014.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the surface waters and alluvial groundwater sources within the planning area. The plan commenced in 2009 and applies for 10 years. The Karuah River WSP may be merged with this plan when it is remade in 2014. This would result in a single plan covering the unregulated water sources in the catchment.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the water management provisions within the plan. The risk to in-stream values posed by existing or increased extraction was assessed based on current information.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but does recognise some of the system is hydrologically stressed. The plan establishes a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes, the achievement of which will be difficult to measure. While the plan includes strategies for achieving its objectives, monitoring and reporting arrangements to assess their effectiveness are not specified.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Interception activities such as forestry have been considered within the plan. Several statewide policies guide the management of other potential intercepting activities, including farm dams and mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises surface water and groundwater connectivity in the planning area and establishes appropriate integrated management arrangements.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	While environmental objectives are specified in the plan, the water requirements to achieve those objectives are not stated. They are implicit to an extent in the water management rules set out in the plan. Environmental water provisions are given effect in Water Supply Work Approvals, and Macquarie Generation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	There is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Some information on the plan's effectiveness in delivering its water dealings and security objectives may be available from various registers that document available water determinations and trade activity. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There was no quantification of the potential risk to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement provided opportunities for all interested parties to contribute to the plan's development and refinement. Stakeholder input is transparently recorded in the plan's supporting documentation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

MACQUARIE AND CUDGEGONG REGULATED RIVERS WATER SOURCE WATER SHARING PLAN 2003



Context

The Macquarie catchment lies within the Murray–Darling Basin and includes the internationally important Macquarie Marshes. Water in the Macquarie River is regulated by two major storages in the upper catchment (Burrendong and Windamere) and supports a range of industries including agriculture, tourism, mining and viticulture. The largest agricultural use of water in the valley is for cotton production and most of the major towns rely on the catchment's rivers for their water supply. The WSP for the Macquarie and Cudgegong Regulated Rivers commenced in 2004 but was suspended three years later due to severe water shortages. It recommenced on 16 August 2011.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the regulated surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by 2015.
2. Does the plan include key assessments?	Yes	The local Macquarie Cudgegong River Management Committee conducted key assessments as part of plan development and drafting (e.g. hydrological and economic modelling). This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information on the environmental and consumptive use trade-offs that underpin the extraction limit is no longer publicly available.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specific. Ecological, socio-economic and cultural objectives are broad and their measurement will require considerable effort. Entitlement-related objectives are likely to be measurable using routinely collected hydrologic and trade parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of floodplain harvesting, forestry and mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. Environmental assets and their water requirements are not clearly detailed and monitoring is not a clearly embedded component of the plan or supporting documents. Environmental water provisions are given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There are some self-adjustment mechanisms but no quantification of the potential risk to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards implementation of some plan actions, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Audits of plan-implementation effectiveness publicly report this information. Little information is available to determine progress towards achievement of environmental or cultural objectives.

MACQUARIE BOGAN UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



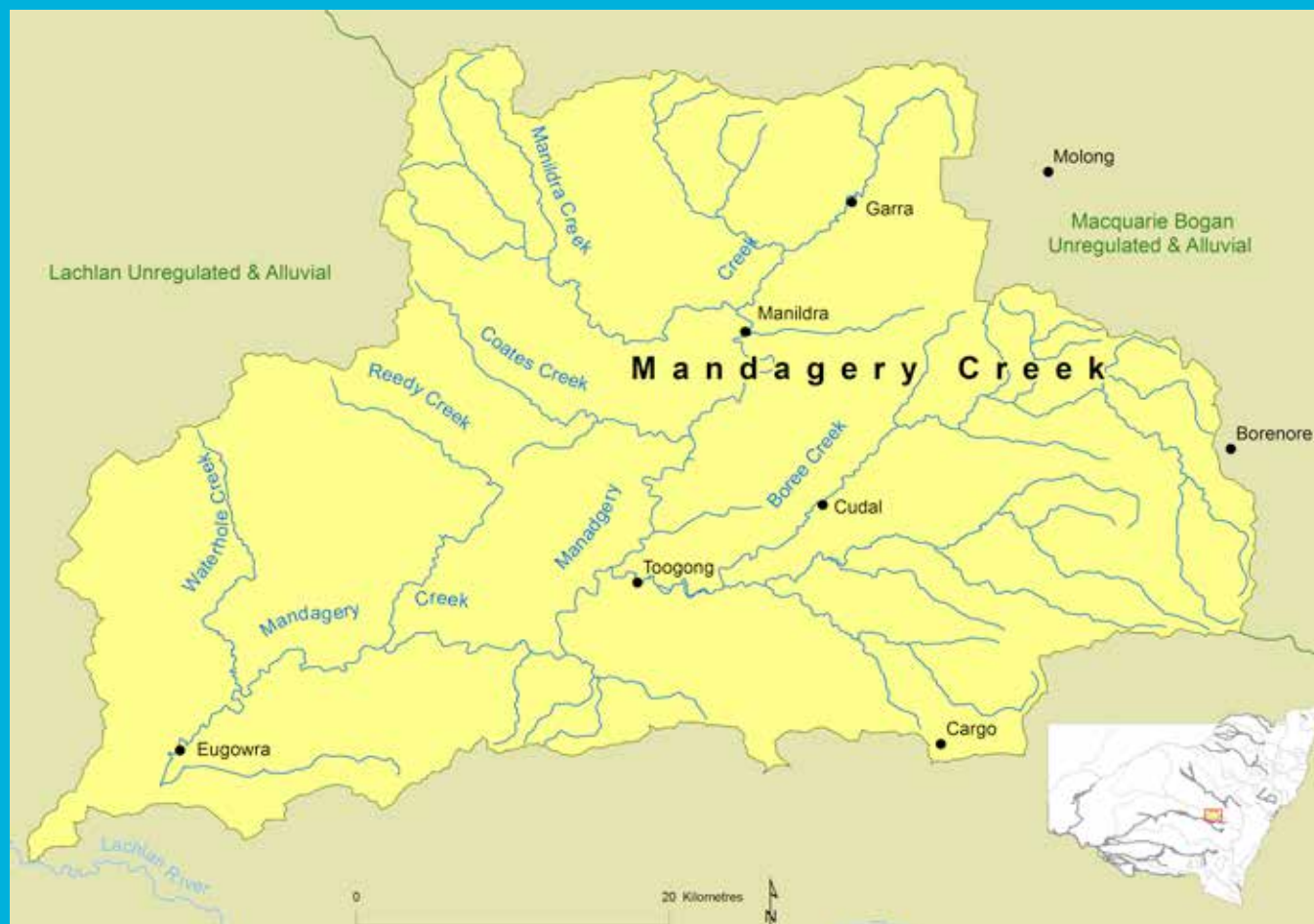
Context

The Macquarie–Bogan catchment drains from the Great Dividing Range near Bathurst into the Barwon River near Brewarrina. It is part of the northern Murray–Darling Basin. The two rivers are connected at the bottom of the catchment by a series of effluent creeks that drain from the Macquarie into the Bogan. The Macquarie River is regulated by two major storages, Burrendong Dam and Windamere Dam, both in the upland part of the catchment. The Ramsar-listed Macquarie Marshes are at the bottom of the catchment. Major water users are agriculture (mainly cotton and livestock enterprises) and urban water supplies. This plan covers both the unregulated parts of the Macquarie River and the Bogan River, which is unregulated although it has a small weir for the Nyngan town water supply.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WSP for the Macquarie Bogan Unregulated and Alluvial Water Sources commenced on 4 October 2012. The plan applies for 10 years.
2. Does the plan include key assessments?	Yes	The plan was developed using the macro approach that requires risk assessments for in-stream value, economic value and community dependence on water extraction. These risk assessments were further informed by local studies and information from local sources, in addition to the consultation process.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan area is at full allocation. The plan does not provide for additional licences unless they are for specific purposes (Aboriginal cultural licences). It permits exceeding the LTAAEL above specified thresholds over rolling five-year periods, primarily in recognition of climatic variability and associated usage variability. The plan has rules to manage extraction in line with the LTAAEL and to prevent overallocation and overuse.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan has generic objectives, strategies and performance indicators, but monitoring and reporting arrangements for the measurement of these are not specified. Ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement, whereas some trade and extraction objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception has been considered (e.g. BLR, Harvestable Rights, floodplain harvesting, forestry) in the plan's development, but there is no evidence that specific provisions for improved quantification and compliance have been implemented.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The plan recognises the connectivity of groundwater and surface water resources but notes it is not practical to manage these connected sources in an integrated fashion. For the Cudgegong Alluvial Water Source (only), rules for groundwater extraction are linked to surface water rules.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Environmental objectives are specified, and the plan includes LTAAEL and cease-to-pump rules that are intended to ensure conservation of environmental values. The water requirements of environmental assets have not been comprehensively quantified and monitoring of environmental outcomes is not a clearly embedded component of the plan.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	There is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Some information on the plan's effectiveness in delivering its water dealings and security objectives may be available from various registers that document available water determinations and trade activity. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Although the plan recognises the potential for climate variability to affect water availability, there is no reference to the long-term implications of climate change. No long-term strategies are outlined.
11. Is stakeholder engagement in the planning process adequate?	To some extent	As per the requirements of the macro approach, there is evidence of the targeted consultation and public exhibition processes. There is no publicly available record of issues raised and how they were resolved.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is less than two years old and hence no reporting against plan outcomes has occurred as yet. It is unclear whether sufficient monitoring arrangements are in place to enable assessment against the plan's performance indicators. There is some monitoring to enable reporting against statewide targets on the condition of groundwater. Some monitoring of socio-economic aspects is also occurring, but at a regional rather than plan area level.

MANDAGERY CREEK WATER SOURCE WATER SHARING PLAN 2003



Context

The Mandagery Creek Water Source is a major unregulated tributary of the Lachlan River in the central west of NSW. Mandagery Creek and its tributaries have highly variable flow patterns, but on average flows are low for most of the time, with occasional large events in response to heavy rainfall. Irrigation and domestic and/or stock needs are the main consumptive water uses within the planning area. The area is considered hydrologically stressed because of the high consumptive water demand during the system's summer low flows. Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability is the primary planning driver. Despite being one of many unregulated rivers in the Lachlan catchment, Mandagery Creek has been managed under a discrete WSP, which commenced in 2004.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Lachlan Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Although the plan does not identify any areas of overuse, the system is considered hydrologically stressed during low-flow periods. The plan establishes a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented objectives, strategies and related performance indicators, but monitoring and reporting arrangements for measuring achievement against these is not specific. Most of the plan's objectives are measurable using routinely collected hydrologic parameters, but some ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not address groundwater and surface water connectivity.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes a cease-to-pump level to protect a portion of low flows, and daily flow-sharing volumes to protect natural medium- to high-flow variability. The environmental water provisions are based on the hydro-ecological assumption that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Measurement of socio-economic objectives began in 2006 as part of a statewide program and water trade activity and streamflow are routinely monitored. A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not explicitly deal with climate change; rather it assumes the in-built review will provide sufficient adaptive capacity. There are some self-adjustment mechanisms for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive community engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition allowed for broader public input. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR), but there is no publicly available assessment of how the plan has performed against its objectives. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

MURRAH-WALLAGA AREA UNREGULATED AND ALLUVIAL WATER SOURCE WATER SHARING PLAN 2010

Context

The Murrah–Wallaga area is located on the south-east coast of NSW and includes the towns of Cobargo and Bermagui. The catchment has a relatively high density of sensitive estuaries and coastal lakes. Beef grazing and dairy farming are the main agricultural activities and these comprise 30 per cent of land use; the other 70 per cent is primarily state forest and national park. A significant area of land is harvested for timber and paper products. The catchment has very low flows due to the small catchment size and moderate rainfall. Although the total volume of water extracted is relatively low compared with average annual flow, most of the demand for water occurs when streamflow is low. Four water sources were rated as having high in-stream values but were also highly hydrologically stressed.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the surface waters and alluvial water sources within the planning area. The plan commenced in 2010 and applies for 10 years.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the water management provisions within the plan. The risk to in-stream values posed by existing or increased extraction was assessed and a summary was publicly available in the supporting documentation.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but does recognise some of the system is hydrologically stressed. The plan establishes a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad objectives, strategies and related performance indicators linked to the plan's provisions. Monitoring arrangements for measuring plan outcomes are not clearly specified. Most of the plan's objectives are measurable using routinely collected hydrologic parameters, but some ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception for BLR, including consideration of impacts from farm dams. Several statewide policies guide the management of other potential intercepting activities, such as forestry and mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises surface water and groundwater connectivity in the planning area and establishes appropriate integrated management arrangements.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump rules to protect pool connectivity during low-flow periods, and daily flow-sharing volumes to protect natural flow variability. The environmental water provisions are not based on the watering requirements of in-stream assets, but rather on the hydro-ecological assumption that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although the South Coast Valley Progress Report gives some information on studies underway, there is minimal information on the achievement of plan outcomes or progress towards them. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan considered potential climate change in framing access conditions and determining the long-term extraction limit. The plan has strategies in place to deal with the risks posed by long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement provided opportunities for all interested parties to contribute to the plan's development and refinement. Stakeholder input is transparently recorded in the plan's supporting documentation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

MURRAY UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



Context

This WSP covers 15 unregulated water sources and one alluvial groundwater source within the Murray River catchment in the state's south. Water sources in the planning area have high in-stream ecological values and significant economic importance. Consumptive water use includes irrigation, town water supply, domestic and stock uses, industrial purposes and recreation. In some areas peak daily demand can exceed supply during the summer months, which can result in high hydrological stress.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters and alluvial groundwater within the planning area. The plan commenced in 2012 and applies for 10 years.
2. Does the plan include key assessments?	Yes	Several key assessments were conducted to support the plan's development including estimates of consumptive use and the establishment of a long-term extraction limit. Some of the detail underpinning the risk assessment process was not provided until after the public submission period (e.g. background document).
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specific. Ecological and cultural objectives are broad and their measurement will require considerable monitoring effort. Flow and entitlement objectives are likely to be measurable using routinely collected hydrologic and trade parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. The plan may be amended to manage interception impacts from floodplain harvesting, plantations and aquifer interference (mining), but this potential interception is unquantified. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan does recognise the connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements but there is little detailed information presented to underpin them (e.g. current environmental asset condition or water requirements). The specific arrangements for monitoring the effectiveness of this plan in achieving environmental outcomes have not been clearly articulated.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The stakeholder engagement process provided opportunities for input and advice from interested parties during the plan's development. The information used to determine some of the initial water source classifications and indicative water access and trading rules was not publicly available during the public submission period.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	As the plan has only been operational for a year, there has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

MURRUMBIDGEE REGULATED RIVER WATER SOURCE WATER SHARING PLAN 2003



Context

The Murrumbidgee River is a highly developed water source in southern NSW that forms a major tributary of the Murray–Darling River system. The two largest water storages are Blowering and Burrinjuck dams and major water users in the catchment include local councils and water utilities, agriculture (e.g. rice, grapes), forestry and tourism. The Murrumbidgee catchment area has ecologically significant wetlands, such as the Lowbidgee Floodplain and Fivebough Swamp. The alteration of river flows through regulation and extraction has affected the environmental health of the river and its wetlands and contributed to water quality problems, such as salinity. A WSP for the Murrumbidgee Regulated River commenced in 2004, but was suspended in 2006 due to severe water shortages. The plan recommenced on 16 August 2011.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the regulated surface waters within the planning area, including the Lowbidgee Flood Control and Irrigation District. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by 2015.
2. Does the plan include key assessments?	Yes	A local water management committee undertook some key assessments as part of plan development and drafting. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. It does establish the basis for a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Some of the environmental and consumptive use trade-offs made in setting extraction limits are unclear (e.g. increase in environmental water after fifth year).
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for the measurement of these are not specific. While ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement, some trade and extraction objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Consideration of potential impacts from forestry was not evident but subsequent risk assessments conducted by NSW have concluded they are likely to be negligible. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Although the plan has environmental watering arrangements and responsibility for their delivery has been assigned, monitoring is not a clearly embedded component of the plan or supporting documents. Environmental water provisions are given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report. It should be noted that due to severe water shortages in NSW the plan was suspended for five years.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some environmental, water accounting and socio-economic monitoring has been undertaken under a range of programs (e.g. IMEF, MDB Cap Audit, OEH environmental watering). Although a comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators has been drafted, it is not yet publicly available. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There are some self-adjustment mechanisms but no quantification of the potential risk to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards implementation of some plan actions, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Audits of plan-implementation effectiveness are publicly available. Although there has been no coordinated reporting on the achievement of plan outcomes, an evaluation report is pending which will provide an assessment of the plan's performance.

MURRUMBIDGEE UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



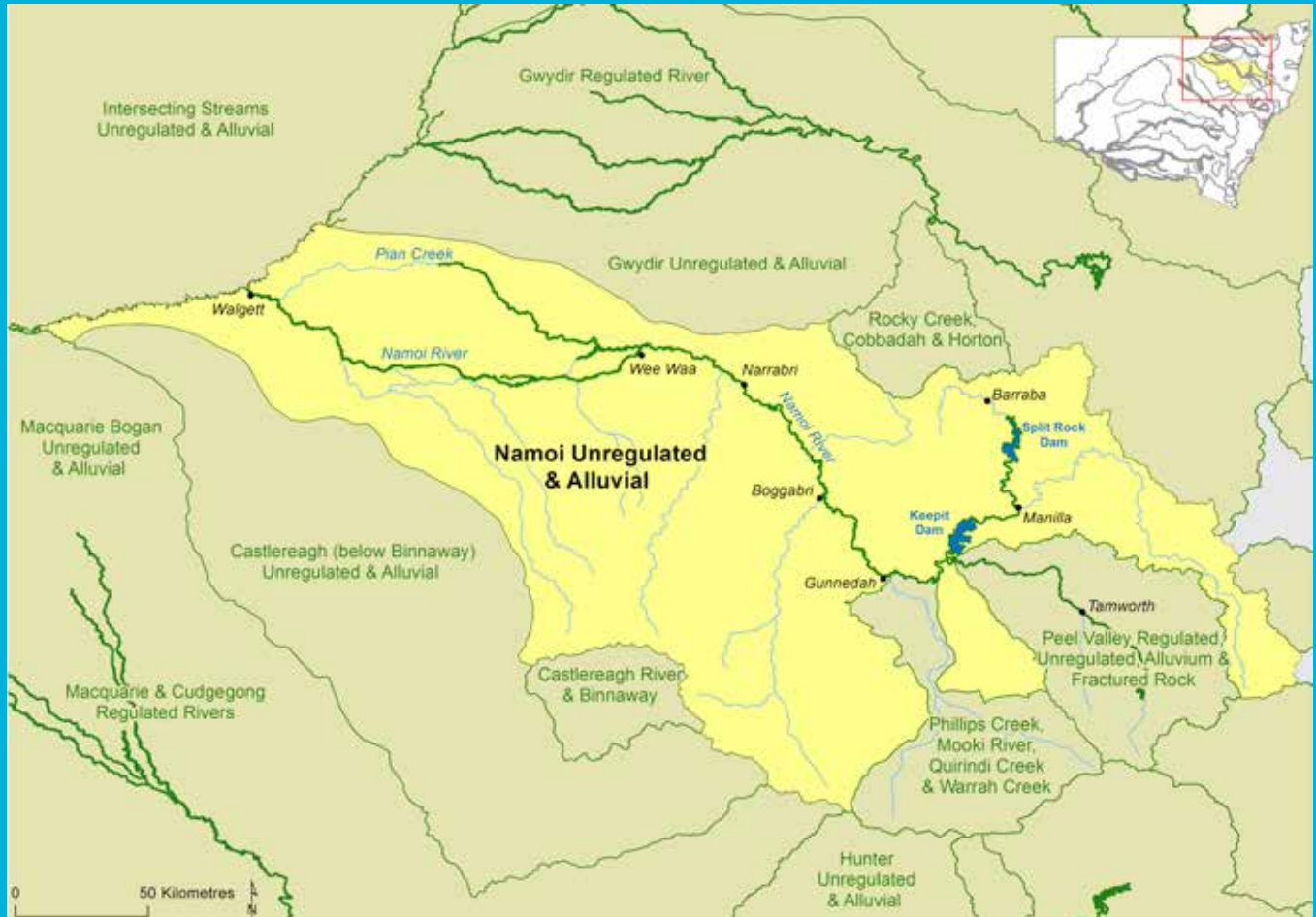
Context

The plan area is located in the south west of NSW and includes the major towns of Balranald, Hay, Griffith, Leeton, Narrandera, Wagga Wagga, Gundagai, Tumut, Cootamundra, Queanbeyan, Yass and Cooma. The plan applies to 39 unregulated water sources and six alluvial groundwater sources in the Murrumbidgee and Murray water management areas, both of which are within the Murray–Darling Basin. Seven of the 39 surface water sources have high in-stream value and include features such as the Lowbidgee Floodplain, the mid-Murrumbidgee wetlands and the alpine habitats. Major structures in the catchment, although not covered by the plan, include Burrinjuck Dam, Blowering Dam and Tantangara Reservoir and the Murrumbidgee Irrigation Area. The major current land uses are grazing, cereal farming, irrigation farming (including fruit and vegetables), urban development, horticulture, forestry and viticulture.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan commenced in 2012 and is due for replacement or extension in 2022. From 2014 when the plans for Upper Billabong, Tarcutta and Adelong Creek are due for extension/replacement, it is proposed to merge them into the Murrumbidgee Unregulated and Alluvial WSP.
2. Does the plan include key assessments?	Yes	The plan was developed using the macro approach that requires risk assessments for in-stream value, economic value and community dependence on water extraction. These risk assessments were further informed by local studies and information from local sources, in addition to the consultation process.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan area is at full allocation. The plan does not provide for additional licences unless they are for Aboriginal cultural purposes, town water supply or salinity control. The plan has rules to manage extraction in line with the LTAAEL and allows for adjustments to available water determinations if the extraction limit is exceeded.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Although the plan details objectives, strategies and performance indicators, which can be assessed over the plan's life, it does not identify specific monitoring arrangements.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan identified interception activities known at the time the plan commenced and made allowances for them over the plan's life. The plan requires water access licences for farm dams that exceed the maximum harvestable right. The plan does not specify monitoring requirements for interception activities. Some intercepting activities may be managed by arrangements outside the plan (e.g. mining), which require compliance with plan conditions.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan conjunctively manages water resources from 39 unregulated river sources and six connected groundwater sources. The plan identifies the degree of connectivity across sources. Part of one of the groundwater sources is highly connected to the regulated river surface water and managed to reflect this connectivity.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan contains clear arrangements (licensing arrangements, LTAAEL and cease-to-pump rules under flow classes) that were designed to protect environmental values in the different extraction management units and management zones. The plan does not specify monitoring arrangements.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although the plan does not specify arrangements, monitoring is taking place and reports for several purposes and by several agencies are prepared and published. NOW is in the process of developing a risk-based strategy to improve MER to assess the effectiveness and performance of plans against their key performance indicators.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan accounts for best estimates of climate change over the plan's life through the LTAAEL. Historical variability is taken into account through flow monitoring data. The cease-to-pump rules indirectly account for climate variability, but not for unexpected changes in water availability. The adaptive management approach allows for plan amendments when new information becomes available over the plan's life.
11. Is stakeholder engagement in the planning process adequate?	Yes	The stakeholder engagement process comprised targeted consultation and public exhibition processes. There is ample evidence that input from stakeholders and the broader community was used in developing plan rules. Numerous groups were consulted to provide feedback and refine the rules.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan has only been operational for one year and hence no reporting against plan outcomes has occurred as yet. It is unclear whether sufficient monitoring arrangements are in place to enable assessment against the plan's performance indicators. There is some monitoring to enable reporting against statewide targets on the condition of groundwater and riverine ecosystems and some socio-economic aspects have been considered.

NAMOI UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



Context

The Namoi Valley drains from the Great Dividing Range east of Tamworth into the Barwon River near Walgett. It is part of the northern Murray–Darling Basin. Chief water uses from this source are for town water supplies, irrigation and domestic and stock purposes. The volume and pattern of flows throughout the Namoi Valley have been significantly altered by the extraction of water and dam operations, with the frequency of most flood events and end-of-system flows reduced. These changes have affected the environmental health of the river and its wetlands and contributed to water quality problems in the catchment. A key management issue is the equitable sharing of water between competing water users and the environment. The plan came into effect on 4 October 2012. The two existing plans covering the Peel subcatchment and the Phillips, Mooki, Quirindi and Warrah subcatchments (all within the Namoi Valley) will be merged into this WSP when they are reviewed.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan commenced on 4 October 2012 and applies for 10 years.
2. Does the plan include key assessments?	Yes	The plan was developed using the macro approach that requires risk assessments for in-stream value, economic value and community dependence on water extraction.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan area is at full allocation. Although the plan has rules to manage extraction in line with the LTAAEL – aiming to prevent overuse – this is hampered by a lack of metering of some water use within the plan area.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Although the plan has a set of generic objectives supported by strategies, it lacks a clear set of monitoring, evaluation and reporting actions linked to the objectives.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan and the background document together make it clear that most forms of interception have been considered. The extent of consideration given to the likely impacts of coal mining and coal seam gas developments is unclear.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan addresses connectivity and provides rules that should ensure no single source is adversely impacted because of its connection to another source that is also being used.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan provides for environmental water allocations and cease-to-pump rules for delivery of these allocations. However, the plan lacks a clear set of monitoring, evaluation and reporting actions linked specifically to the environmental water allocations and environmental objectives.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although the plan does not specify monitoring arrangements, there is monitoring taking place and reports for several purposes and by several agencies are prepared and published. NOW is in the process of developing a risk-based strategy to improve MER to assess the effectiveness and performance of plans against their key performance indicators.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan does not indicate explicitly that climate change has been considered. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Even though the public record of the stakeholder engagement process is limited, it is clear from the background document that the IRP engaged closely with stakeholders and took their views into account in developing the plan.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is less than two years old and hence no reporting against plan outcomes has occurred as yet. It is unclear whether sufficient monitoring arrangements are in place to enable assessment against the plan's performance indicators. There is some monitoring to enable reporting against statewide targets on the condition of groundwater. Some monitoring of socio-economic aspects is also occurring, but at a regional rather than plan area level.

NORTH-WESTERN UNREGULATED WATER SOURCES AND NORTH-WESTERN FRACTURED ROCK GROUNDWATER SOURCES WATER SHARING PLAN 2011



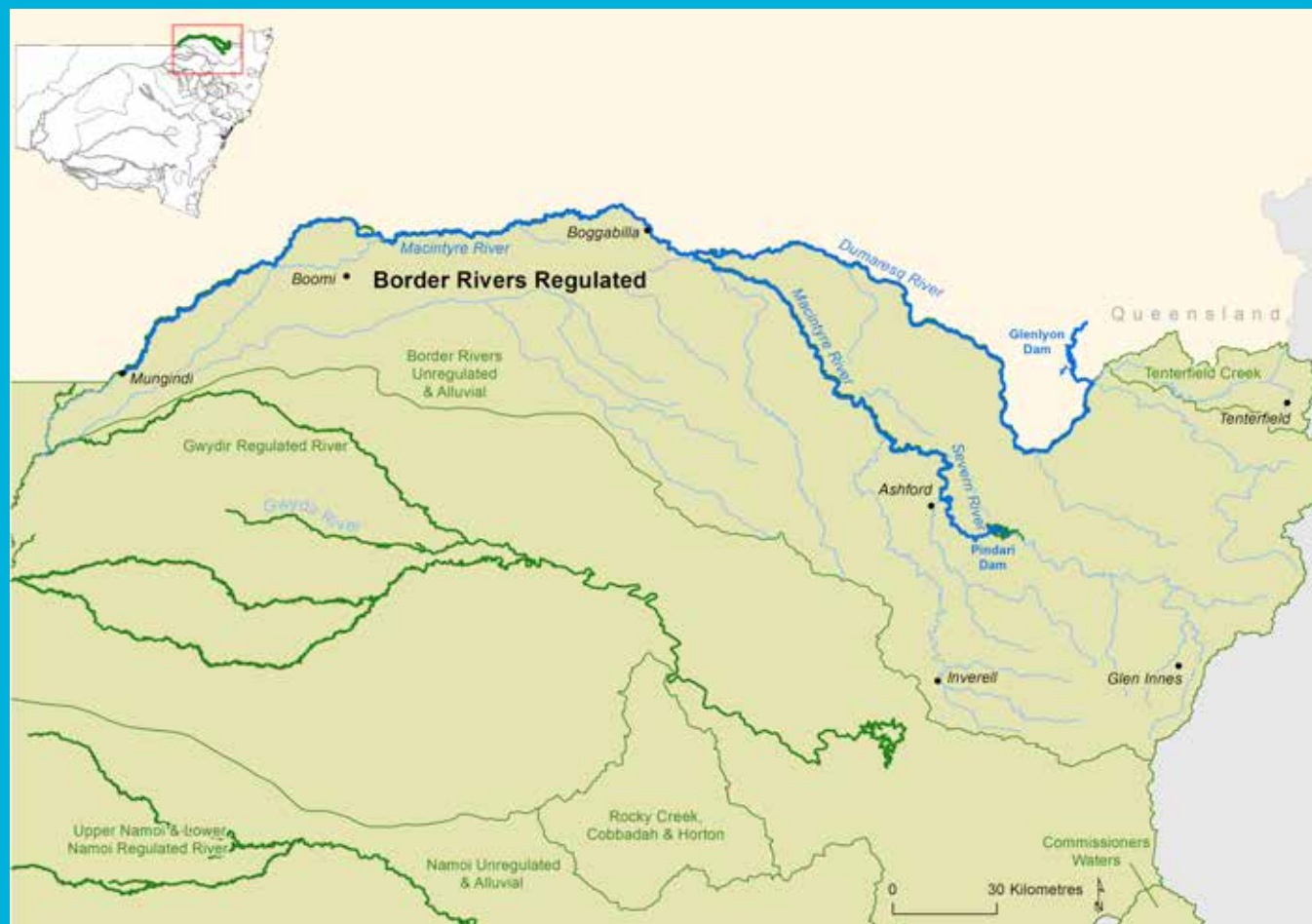
Context

This plan covers two groundwater sources and one unregulated surface water source in the north west of NSW. The plan area sits outside the Murray–Darling Basin and includes the towns of Tibooburra and Milparinka. At present the low volume of water entitlement provides for industrial purposes, mining or domestic and stock water use. These water sources are relatively undeveloped and the plan provides for volumes of unassigned water which could potentially allow new small business ventures to expand into the region.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters and fractured rock groundwater sources within the planning area. The plan commenced in 2011 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Some key assessments were conducted to support the plan's development, including estimates of consumptive use. The standard macro planning assessments (e.g. risk assessments for water sources) were not made publicly available during the exhibition period.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. In addition, limits to extraction of recharge generated over high environmental/conservation value areas have been established. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specific. Ecological and cultural objectives are broad and their measurement will require considerable monitoring investment.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception activities have been identified within the plan, including potential increases in water demand related to BLR and provision of unassigned water to meet future water needs. There are no volumetric estimates for the predicted increase in BLR and no threshold set above which licensing would be required.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises the connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Although this is a relatively undeveloped water resource, the plan identifies environmental watering arrangements for each water source. There is little detailed information provided to underpin these arrangements (e.g. current environmental asset condition or water requirements).
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some socio-economic and ecological monitoring has begun, but the plan has only been operating for two years and hence reporting has been minimal. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	The stakeholder engagement process provided opportunities for input and advice from interested parties during the plan's development. The information used to determine the water source classifications and indicative water access and trading rules is not publicly available (e.g. risk assessments).
12. Have identified outcomes been achieved during the reporting period?	To some extent	As the plan has only operated for two years, there has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

NSW BORDER RIVERS REGULATED RIVER WATER SOURCE WATER SHARING PLAN 2009



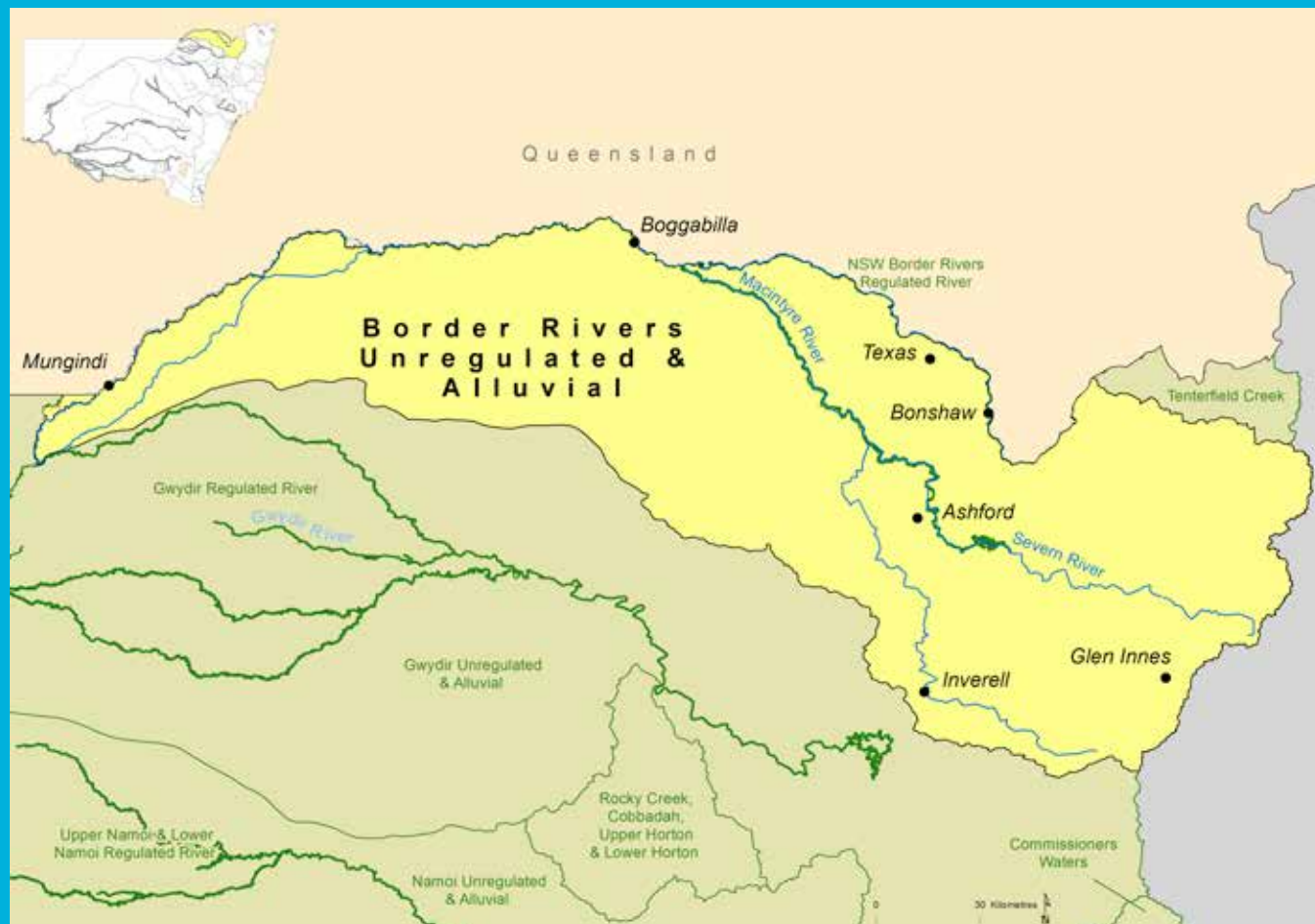
Context

The Border Rivers catchment lies within the Murray–Darling Basin. It contains the Dumaresq and Macintyre rivers, which form part of the state border between Queensland and NSW. Management of the system is covered by an intergovernmental agreement between the NSW and Queensland governments ratified in 1946 and amended in 2008, which stipulates an end-of-system flow requirement. The area supports a variety of irrigated and dryland agricultural industries, such as intensive fruit and vegetable production, grazing, broadacre cropping and cotton. Development of the WSP was prioritised due to the growth in extractions in the 1980s–90s and introduction of the Murray–Darling Basin cap.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A statutory plan commenced in 2009 for the regulated surface water of the NSW Border Rivers. It applies for 10 years.
2. Does the plan include key assessments?	To some extent	The plan and supporting documentation provide information on the key assessments conducted and include links to the studies that underpin the relevant data. The assessments were completed eight years before the plan was finalised in 2009 but were reviewed during plan finalisation.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	While the plan does not identify overuse, it does establish a long-term extraction limit and environmental water rules that aim to prevent overuse. The plan also allows for reductions to allocations if the extraction limit is exceeded. The environmental and consumptive use trade-offs that underpin the extraction limit were set under the intergovernmental agreement and are not publicly available.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan identifies objectives, strategies and performance indicators. Ecological objectives are broad and their measurement will require considerable effort. Most objectives are measurable using routinely collected hydrologic parameters. A specific monitoring schedule, which is required under the intergovernmental agreement, is yet to be developed.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. Cross-border trade is managed under the intergovernmental agreement.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, and allowing for the possibility of floodplain harvesting. Forestry is identified as a major land use, but is not quantified or managed under the plan. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not include information on the potential connectivity between surface water and groundwater. The extent to which connectivity and potential impact on GDEs is considered in the hydrological modelling is unclear.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Although the plan has environmental watering arrangements and assigns responsibility for its delivery, monitoring arrangements to assess whether environmental objectives are being achieved are not detailed. Environmental water provisions are given effect to in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Although objectives and performance indicators are identified, monitoring activities and reporting to assess progress are not specified. Some hydrological monitoring has occurred but reporting is ad hoc. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The long-term extraction limit is based on historical use with variation between years based on climatic conditions. Long-term historical climatic data was used to inform the development of water sharing rules but no long-term climate change strategies are in place to respond to associated risks to system health or entitlement securities.
11. Is stakeholder engagement in the planning process adequate?	To some extent	The Border Rivers Regulated River Management Committee developed the plan, which to some extent was based on agreements reached under the intergovernmental agreement. Public submissions were accepted on the draft plan but information explaining the final decision-making process was not made available to the public.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards some plan objectives (e.g. provision of tradeable water entitlements). However, the 2009 Valley Progress Report indicates the monitoring program required under the intergovernmental agreement is yet to be completed. As such, it is difficult to assess the achievement of plan objectives.

NSW BORDER RIVERS UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2012



Context

The Border Rivers catchment lies within the Murray–Darling Basin and the Dumaresq and Macintyre rivers form part of the state border between Queensland and NSW. The plan area comprises 12 surface water and four groundwater sources and covers the townships of Inverell, Ashford and Glen Innes. The catchment has summer-dominant rainfall with high variability and the area supports a variety of irrigated and dryland agricultural industries, such as fruit and vegetable production, grazing, broadacre cropping and cotton. A separate WSP applies to the regulated Border Rivers and this macro plan was developed for the remaining water sources not previously covered by a WSP.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters and alluvial groundwater within the planning area. The plan commenced in 2012 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Some key assessments were conducted to support the plan's development (e.g. estimates of consumptive use), but much of the detail underpinning these estimates and the risk assessments were not provided in the draft plan or supporting documents (e.g. condition of environmental assets).
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. The extraction limit is based on a survey of current extractions from the water sources plus an estimate of BLR. There are provisions for reductions to allocations if the extraction limit is exceeded, but these cannot be implemented until the sixth year of the plan.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan does include clearly identified outcomes linked to strategies and performance indicators. Risk assessment and monitoring arrangements are not clearly articulated for all plan objectives.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. The plan can be amended to manage floodplain and stormwater harvesting, plantation forestry and aquifer interference (e.g. mining). Quantitative information on potential interception activities is not provided despite projected increases (e.g. forestry).
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises the connectivity between surface water and groundwater. All the alluvial aquifers in the plan area are considered highly connected to surface water and will be managed as a single resource.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan identifies environmental watering arrangements, but little detailed information is given to underpin them (e.g. studies of current environmental asset condition, verification of modelled recharge or groundwater storage capacity). Environmental water is tied to extraction limits, and in some systems limits are yet to be determined.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Some components of the stakeholder consultation process are unclear, such as the identification of stakeholder groups and approach for targeted consultation. There is also uncertainty about the level of detail provided during public exhibition of the draft plan (e.g. information on extraction limits).
12. Have identified outcomes been achieved during the reporting period?	Not applicable	As the plan has only been operational for a year, there has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

NSW GREAT ARTESIAN BASIN GROUNDWATER SOURCES WATER SHARING PLAN 2008



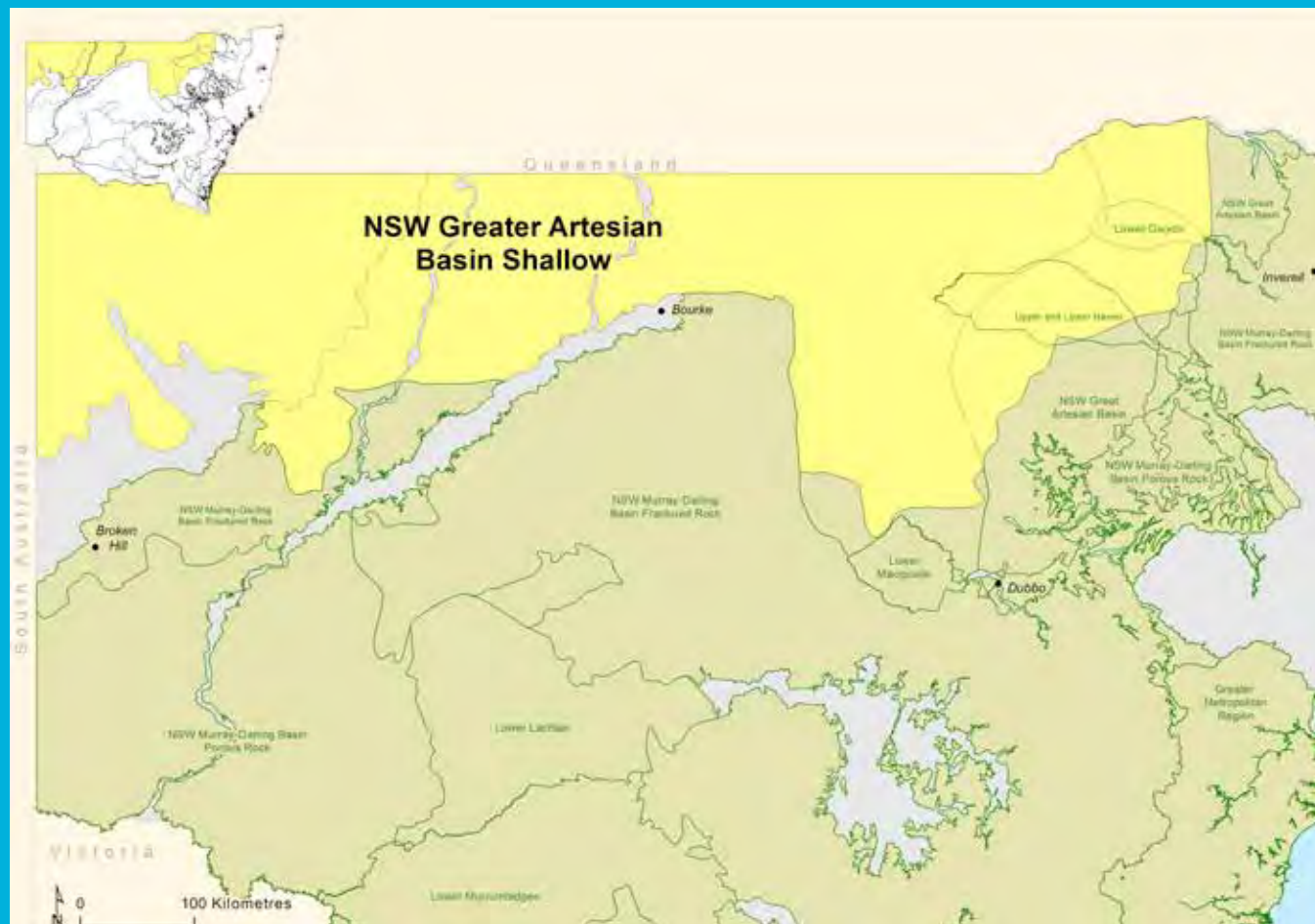
Context

This plan applies to the NSW component of the Great Artesian Basin (GAB) in the north of the state. Natural discharge from the GAB occurs via mound springs, which often have high conservation, cultural and heritage values. Groundwater development in the GAB has supported the pastoral industry for more than 120 years but has caused substantial groundwater pressure losses resulting in half of the Great Artesian Basin bores in NSW ceasing to flow. The Great Artesian Basin Sustainability Initiative (GABSI) is a coordinated program endorsed by all GAB jurisdictions that began in 1999 to improve artesian pressure by capping and replacing bores across the Basin. The NSW Great Artesian Basin WSP commenced in 2008.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the NSW GAB Groundwater Sources. It commenced in 2008 and applies for 10 years. The plan is likely to be merged with the NSW GAB Shallow Groundwater Sources WSP in 2018 when it is due for replacement/extension.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken and a risk identification process was evident at the time of plan development. The plan recognises that the resource supports important environmental assets and acknowledges that more research is required on GDEs in the plan area. Some further studies have been conducted recently – it is expected these will be incorporated at the next iteration of plan review or extension.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan establishes a descriptive long-term extraction limit that will need to be clearly defined on completion of the GABSI program of works, which includes capping bores and piping channels. Results from recent studies have the potential to change extraction limits and will need to be taken into consideration when the plan is reviewed.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes broad outcomes that are generally linked to plan provisions. Specific arrangements for monitoring plan effectiveness in achieving all outcomes have not been clearly articulated. Ecological and cultural objectives are general and will require considerable monitoring investment to measure their achievement, but trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. The loss of artesian water from uncontrolled bores is also recognised and implementation of the Cap and Pipe program to address this is acknowledged. The plan area has seen rapid growth in unconventional gas and mining developments, a situation causing concern among environmental stakeholders and farming communities. The Aquifer Interference policy provides for management of these activities.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Although the plan describes the connectivity between groundwater and surface water, the degree to which these relationships have informed integrated management is unclear.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. Environmental assets and their water requirements are not clearly detailed and monitoring is not a clearly embedded component of the plan or its supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Groundwater levels and water quality are being monitored, but minimal information is available on the achievement of environmental or cultural outcomes, or progress towards these. Some information on GABSI achievements is available but this is not specifically linked to plan outcomes. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement provided opportunities for all interested parties to contribute to the plan's drafting and refinement. The process included targeted consultation during plan development, public exhibition of the draft plan, and feedback responding to public submissions.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress of the GABSI program, which is closely linked to some of the plan's objectives, has been slower than anticipated for several reasons. GABSI is due to finish in mid-2014. A decision on whether to extend the program has not been made.

NSW GREAT ARTESIAN BASIN SHALLOW GROUNDWATER SOURCES WATER SHARING PLAN 2011



Context

This plan comprises eight groundwater sources that overlie the Great Artesian Basin (GAB) in the north-west of NSW. These stacked groundwater sources have been assessed as having minimal hydraulic connectivity with the GAB. The rules in the plan neither rely on nor alter the existing rules in the GAB plan (e.g. WSP for the NSW Great Artesian Basin Groundwater Sources 2008). The water quality and yields from groundwater sources in the plan area are generally low and so the reliance on these water resources for domestic and stock, town water supply, irrigation or commercial purposes is limited. The plan provides for additional entitlement to be issued to allow for the expansion of irrigation, mining and industrial water use. The draft plan was initially titled 'Groundwater Sources Overlaying the NSW Great Artesian Basin'.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the shallow groundwater sources within the planning area. The plan commenced in 2011 and applies for 10 years. In 2018, when the NSW Great Artesian Basin Groundwater WSP is due for remake, a merger with this plan is proposed which would result in a single plan covering the Great Artesian Basin Groundwater Sources.
2. Does the plan include key assessments?	To some extent	Some key assessments were conducted to support the draft plan's development, including estimates of consumptive use. Some of the detail underpinning water sharing arrangements (e.g. information on environmental assets) was not publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit, including limits to extraction of recharge generated over high environmental/ conservation value areas. The extraction limit reflects environmental and consumptive use trade-offs and the plan allows for adjustments to available water determinations if the extraction limit is exceeded.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specific. Ecological and cultural objectives are broad and their measurement will require considerable monitoring investment.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception activities have been identified within the plan, including potential increases in water demand related to BLR and provision of unassigned water to meet future water needs. There are no volumetric estimates for the predicted increase in BLR and no threshold set above which licensing would be required.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises the potential for connectivity between surface water and groundwater. Assessments of connectivity categorise these water sources as 'less highly connected' and therefore manage them using groundwater rules only.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Although the plan identifies environmental watering arrangements for each water source, there is little detailed information provided to underpin these arrangements (e.g. current environmental asset condition or water requirements).
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests that a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Targeted consultation was undertaken with stakeholder groups to develop water sharing rules in the draft plan. Report cards on each water source were also made available to the public on the NOW website during the public exhibition period and gave information on water resources, recharge estimates, risk assessments and Interagency Panel decisions.
12. Have identified outcomes been achieved during the reporting period?	To some extent	As the plan has only been operational for two years, there has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

NSW MURRAY AND LOWER DARLING REGULATED RIVERS WATER SOURCES WATER SHARING PLAN 2003



Context

This plan covers the regulated surface waters of the Murray River from the Hume Dam storage downstream to the South Australian border and the regulated portion of the Lower Darling from Menindee Lakes. The volume and pattern of flows in the Murray–Darling have been altered not only by Hume Dam on the Murray and Dartmouth Dam on the Mitta-Mitta River, but also by the operation of Menindee Lakes in the Lower Darling River. The Murray and Lower Darling valleys support some of the most highly productive agricultural areas in Australia, as well as significant environmental assets. The process of river regulation has had a wide range of effects on river and wetland health, as well as water quality. A WSP for the Murray and Lower Darling Regulated Rivers commenced in 2004, but was suspended in 2006. The WSP recommenced on 16 August 2011.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the regulated surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is currently under review and due for replacement by 2015.
2. Does the plan include key assessments?	To some extent	A local water management committee undertook some key assessments as part of plan development and drafting, but public documentation of this process has been limited. The extent to which these key assessments have been integrated into water sharing provisions is unclear.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information on the environmental and consumptive use trade-offs that underpin the extraction limit is not publicly available.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for the measurement of these are not specific. While ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement, some entitlement and extraction objectives are measurable using routinely collected trade and hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Consideration of potential impacts from forestry was not evident but subsequent risk assessments have concluded these are likely to be negligible. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not include information on the potential connectivity between surface water and groundwater. The extent to which connectivity was considered in hydrological modelling is unclear.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements but was suspended from 2006 to 2011. The extent to which information on environmental water needs was integrated into plan provisions is unclear. Environmental water provisions will be given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some environmental, water accounting and socio-economic monitoring has been undertaken under a range of programs (e.g. IMEF, MDB Cap Audit, OEH environmental watering, TLM). A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Audits of plan-implementation effectiveness publicly report this information. The plan was suspended for several years and monitoring of plan effectiveness has not been consistently reported in publicly available documents.

NSW MURRAY–DARLING BASIN FRACTURED ROCK GROUNDWATER SOURCES WATER SHARING PLAN 2012



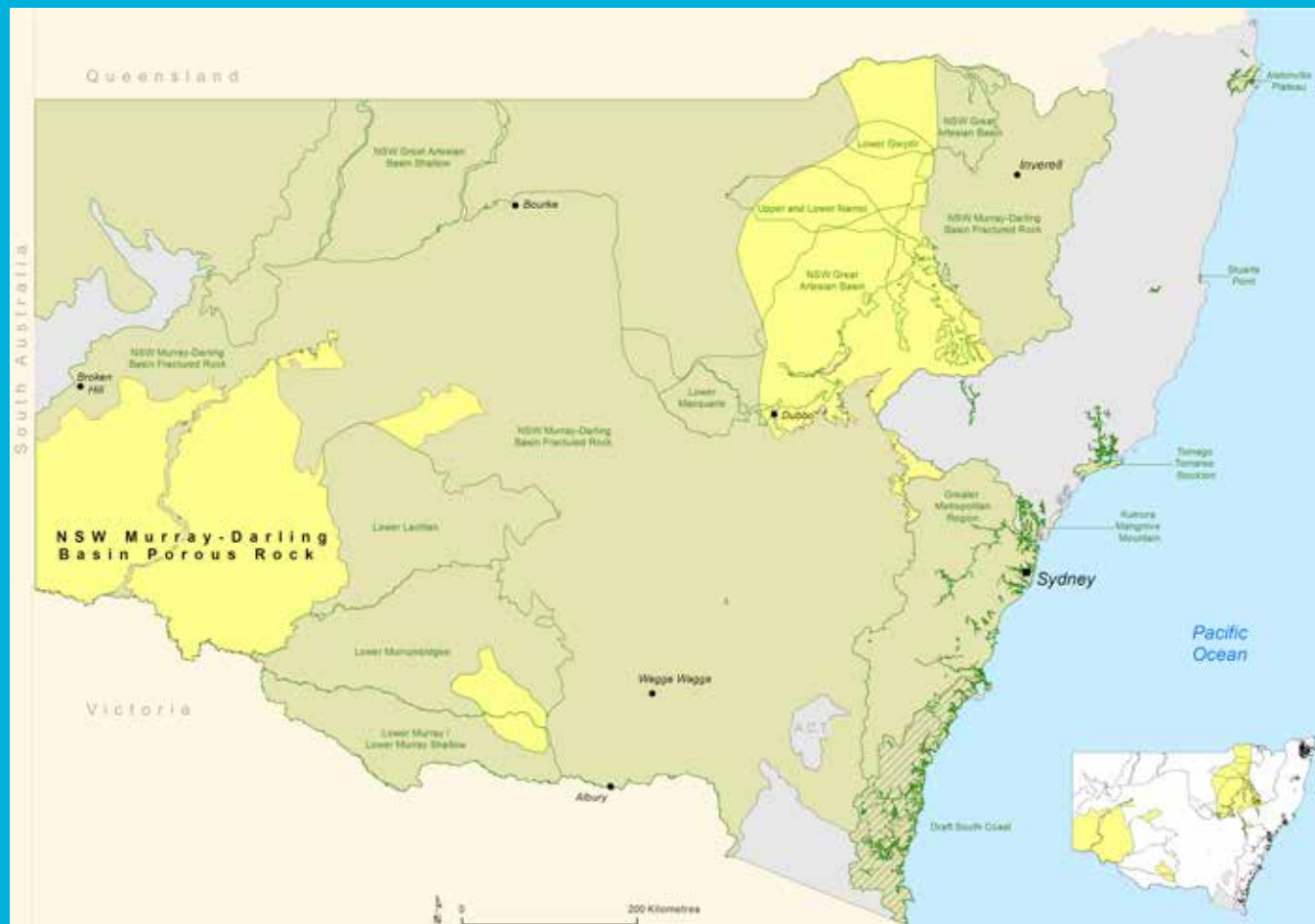
Context

This plan covers 10 fractured rock groundwater sources, all within the Murray–Darling Basin. These groundwater sources do not contain any porous rock or alluvial sediments. While the plan generally limits the granting of new access licences, it does not prevent landholders accessing BLR (i.e. allowable water use by landholders which is unlicensed) and there is a high demand on some water sources from rural residential landholders accessing this type of water entitlement (e.g. Yass catchment groundwater). Note, the plan presently does not cover the Peel Fractured Rock Water Source but this will be added when the Peel plan is reviewed.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers fractured rock groundwater sources within the planning area. The plan commenced in 2012 and applies for 10 years. In 2020 when the Peel Valley WSP is due for remake, and in 2022 when the North Western NSW WSP is due for remake, the fractured rock groundwater sources within these plans will be merged. This would result in a single plan covering the inland fractured rock groundwater sources.
2. Does the plan include key assessments?	To some extent	Some key assessments were conducted to support the plan's development, including estimates of consumptive use. Some of the detail underpinning the risk assessment process was not provided in the draft plan or supporting documents (e.g. condition of environmental assets).
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. In addition, limits to extraction of recharge generated over high environmental/conservation value areas have been established. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specific. Ecological and cultural objectives are broad and their measurement will require considerable monitoring investment.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception activities have been identified within the plan, including potential increases in water demand related to BLR and provision of unassigned water to meet future water needs. There are no volumetric estimates for the predicted increase in BLR and no threshold set above which licensing would be required.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	This plan is a single resource plan but recognises the potential for connectivity between surface water and groundwater resources.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Although the plan identifies environmental watering arrangements for each water source, there is little detailed information provided to underpin these arrangements (e.g. current environmental asset condition or water requirements).
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	The stakeholder engagement process provided opportunities for input and advice from interested parties during the plan's development. The availability of information used to determine the water source classifications and indicative water access and trading rules was inconsistent (e.g. risk assessments).
12. Have identified outcomes been achieved during the reporting period?	Not applicable	As the plan has only been operational for a year, there has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

NSW MURRAY–DARLING BASIN POROUS ROCK GROUNDWATER SOURCES WATER SHARING PLAN 2012



Context

This WSP covers four groundwater sources, all within the Murray–Darling Basin (Gunnedah–Oxley Basin, Oaklands Basin, Western Murray and Sydney Basin). At present the low volume of groundwater entitlement is used for irrigation or for domestic and stock purposes. Many of the porous rock water sources in the plan area contain minerals, coal and gas resources and the plan provides for additional entitlement to be issued – which may allow coal mining and coal seam gas extraction to proceed.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers porous rock groundwater sources within the planning area. The plan commenced in 2012 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Several key assessments were conducted to support the plan's development including estimates of consumptive use and the establishment of a long-term extraction limit. Some of the detail underpinning these estimates and the risk assessments were not provided in the plan or supporting documents (e.g. condition of environmental assets, empirical evidence of environmental water requirements, cultural values of water resources).
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specific. Ecological and cultural objectives are broad and their measurement will require considerable monitoring effort. Extraction and entitlement objectives are likely to be measurable using routinely collected parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. There is recognition of potential increases in water demand related to mining activities. Statewide policies guide the management of mining interception and the plan may be amended to manage interception impacts from aquifer interference (e.g. mining).
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	This plan is a single resource plan but does recognise the potential for connectivity between surface water and groundwater resources.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Water sharing rules outlined in the plan clearly identify environmental watering arrangements, but there is little detailed information presented to underpin them (e.g. water requirements or condition of environmental assets).
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	The stakeholder engagement process provided opportunities for input and advice from interested parties during the plan's development. The information used to determine some of the initial water source classifications and indicative water access and trading rules is not publicly available (e.g. cultural values, environmental assets).
12. Have identified outcomes been achieved during the reporting period?	Not applicable	As the plan has only been operational for two years, there has been minimal reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

OURIMBAH CREEK WATER SOURCE WATER SHARING PLAN 2003



Context

Ourimbah Creek is a major tributary of Tuggerah Lakes, a large coastal saltwater lake with significant wetlands on the central coast of NSW. The water source is largely perennial, however its annual and daily flows vary considerably. Irrigation, farming, town water supply and domestic and/or stock needs are the main consumptive water uses. Irrigation supports significant primary industries such as turf growing and fruit and vegetable production. The plan commenced in 2004 to direct equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability. The plan was suspended from December 2006 to April 2010 when drought caused a critical shortage of water for the Gosford/Wyong Councils' Water Authority. The plan is unlikely to be suspended again as the Authority is implementing a 40-year demand planning strategy (WaterPlan 2050) to enhance the area's urban water supplies.

Findings

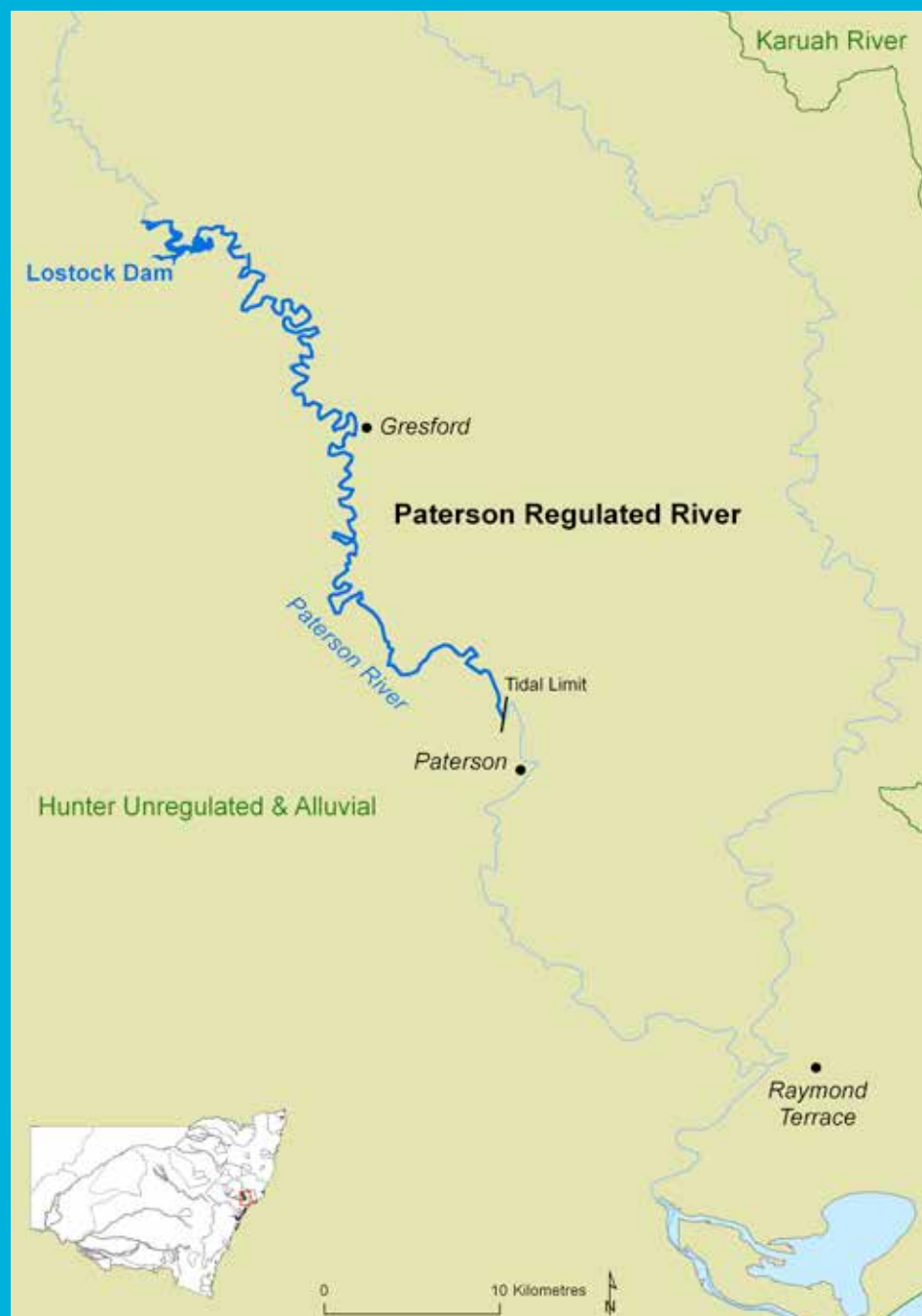
Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. The plan was suspended from 2006 to 2010. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Central Coast Unregulated Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Although the plan does not identify any areas of overuse, the system is considered hydrologically stressed during low-flow periods. The plan establishes a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented objectives, strategies and related performance indicators, but monitoring and reporting arrangements for measuring achievement against these is not specific. Most of the plan's objectives are measurable using routinely collected hydrologic parameters, but some ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. Water trading remained possible while the plan was suspended.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	The plan is a single resource plan and does not address groundwater and surface water connectivity.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump rules to protect some low flows, and daily flow-sharing arrangements to protect natural flow variability. Extraction was permitted below the cease-to-pump level while the plan was suspended, compromising the security of the plan's environmental water.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not deal with climate change; rather it assumes the in-built review will provide sufficient adaptive capacity. The Minister suspended the plan's operation in 2006 as drought conditions threatened available town water supply. Construction of urban water supply infrastructure for the central coast will improve the security of supply for entitlement holders.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive community engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition allowed for broader public input. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR), but there is no publicly available assessment of how the plan has performed against its objectives. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

PATERSON REGULATED RIVER WATER SOURCE WATER SHARING PLAN 2007

Context

The Paterson River is a major tributary of the highly developed Hunter River. This WSP applies to the regulated section of the Paterson River from Lostock Dam downstream to the tidal limit; it is one of five plans that control the overall extraction of water in the Hunter Valley. Major water uses along the regulated Paterson River are town water supply, irrigation and stock and domestic use. Only five per cent of the Paterson River's average annual flow is available for consumptive use, however high extractive demands place pressure on the resource between December and March when flows are typically low. Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability is the primary planning driver.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers regulated surface waters (including some unconsolidated alluvial sediments) within the planning area. The plan commenced in 2007 and applies for 10 years.
2. Does the plan include key assessments?	Yes	Key hydrologic, socio-economic and environmental assessments were undertaken as part of plan development and drafting.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It establishes a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented objectives, strategies and related performance indicators, but monitoring and reporting arrangements for measuring achievement against these is not specific. Most of the plan's objectives are measurable using routinely collected hydrologic parameters, but some ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	To some extent	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. Permanent and temporary trade is prohibited into and out of the water source to manage third-party impacts. Detailed justification of this barrier to trade is not available.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of other potential intercepting activities, such as forestry and mining/exploration.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan that addresses surface water only, with no reference to integrated management arrangements. The more recent Hunter Unregulated and Alluvial Water Sharing Plan 2009 has management arrangements to integrate the highly connected Paterson River alluvial groundwater source with the regulated river system.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements that require end-of-system flows, protection of a percentage of high flows and an environmental contingency allowance for critical events (e.g. algal blooms). Environmental water provisions are given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan and its supporting legislative framework provide compliance and enforcement mechanisms, particularly in relation to compliance with the extraction limit. Compliance with the limit has not been assessed due to lack of data collection and model update. There is relevant, but not specific, monitoring and reporting being undertaken by other state programs.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not address climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements), but no comprehensive reporting on progress towards achievement of the plan's outcomes has occurred. The five-year audit of plan-implementation effectiveness is now publicly available.

PEEL VALLEY REGULATED, UNREGULATED, ALLUVIUM AND FRACTURED ROCK WATER SOURCES WATER SHARING PLAN 2010



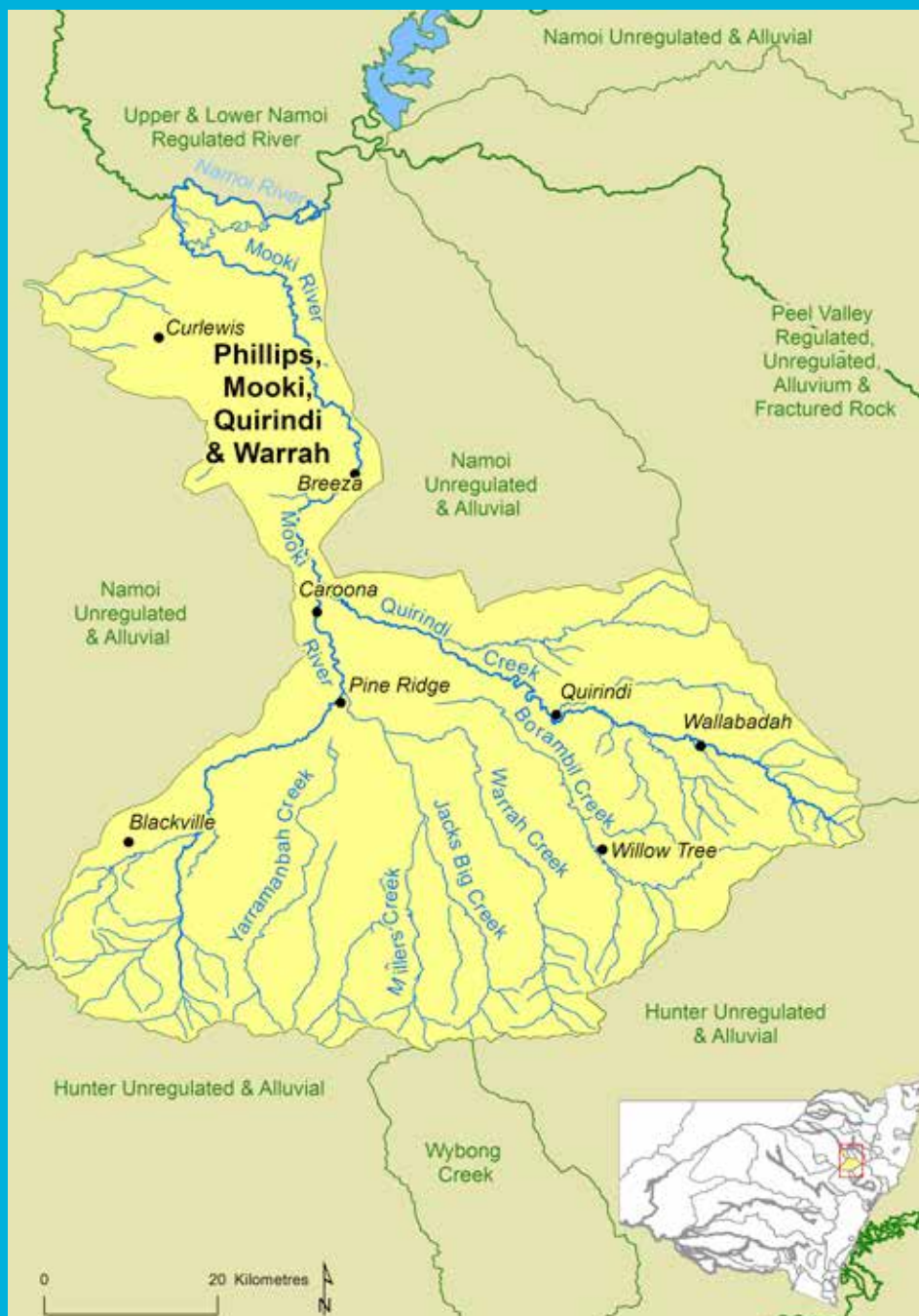
Context

This plan for the Peel Valley covers the regulated Peel River, its associated unregulated creeks, fractured rock and the highly connected alluvial groundwater sources within the plan area. The Peel River is regulated by Chaffey Dam, which provides water for Tamworth's town water supply and agriculture in the region. Consumptive water use is heavily dominated by irrigation, primarily pasture and fodder crops. Several water sources in the Peel Valley are highly developed and have been classified as being at-risk. The Peel Valley is managed under a discrete WSP, although the Peel River is a tributary of the regulated Namoi River.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan for the Peel Valley regulated, unregulated, alluvium and fractured rock water sources commenced in 2010 and applies for 10 years.
2. Does the plan include key assessments?	Yes	The plan and supporting documentation provide information on the key assessments undertaken (e.g. hydrological modelling, identification of ecological assets, risk assessments) and include links to the studies that underpin the relevant data. Few details are provided on the current condition and water requirements of environmental assets.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	There are no areas of overuse identified by the plan. It establishes a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for the measurement of these are not specific. While ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement, some trade and extraction objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception has been considered (e.g. floodplain harvesting, forestry). Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan does recognise the connectivity of groundwater and surface water resources and facilitates their integrated management. For example, where surface water and groundwater sources are highly connected, groundwater extraction is linked to surface water rules.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Environmental objectives are specified in the plan, but the water requirements of environmental assets have not been clearly quantified by empirical studies and monitoring is not a clearly embedded component of the plan or supporting documents. Environmental water provisions are given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	There is no clearly defined monitoring program in the plan. Some monitoring of the plan's effectiveness in delivering its water security objectives is available from various registers that document available water determinations and trade activity, as well as from State Water Corporation annual compliance reports. There is a legislative framework to provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan recognises the potential for climate change and variability to affect water availability, including a discussion of predicted climate change scenarios in supporting documents. No long-term strategies are explicitly outlined.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved considerable stakeholder consultation and engagement, including establishment of the Peel Advisory Group to address issues raised by stakeholders. Public submissions on the draft plan and IRP responses to these have been recorded in the plan's supporting documentation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards achieving some of the plan's intended outcomes is being made (e.g. provision of tradeable water entitlements), but whether this is occurring for the plan's environmental, water quality and Aboriginal cultural objectives is less clear. Reporting against the plan's performance indicators is not due until 2020.

PHILLIPS CREEK, MOOKI RIVER, QUIRINDI CREEK AND WARRAH CREEK WATER SOURCES WATER SHARING PLAN 2003



Context

This plan area is located on the northern slopes of NSW within the Namoi Water Management Area. These water sources are tributaries of the regulated Namoi River, entering through the Mooki River upstream of Gunnedah. All four water sources are ephemeral and have variable river flows throughout the year, yet they support high levels of licensed water use – most of which is for irrigation and domestic and stock purposes. Town water supply is also a significant use in the Quirindi water source. The planning area is considered hydrologically stressed because of the high reliance on the system's low summer flows. The plan aims to protect a proportion of these low flows from extraction for the benefit of the environment and to ensure equitable sharing among consumptive users.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Namoi Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify overuse, but does recognise the system is hydrologically stressed. The plan establishes a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes linked to the plan's provisions. Monitoring arrangements for measuring plan outcomes are not clearly specified within the plan or its supporting documents.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities, such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan that addresses surface water only, with no reference to integrated management arrangements.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump and commence-to-pump levels to protect pool connectivity during low-flow periods, and daily flow-sharing volumes to protect natural medium- to high-flow variability. The environmental water provisions are not based on the watering requirements of in-stream assets, but rather on hydro-ecological assumptions that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	While the plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements, it does not quantify the potential risks to system health or entitlement securities under the current climatic regime. The plan does not deal with climate change; rather it assumes the in-built review cycle will provide sufficient adaptive capacity.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive community engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR), but there is no publicly available assessment of how the plan has performed against its objectives. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

RICHMOND RIVER AREA UNREGULATED, REGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2010

Context

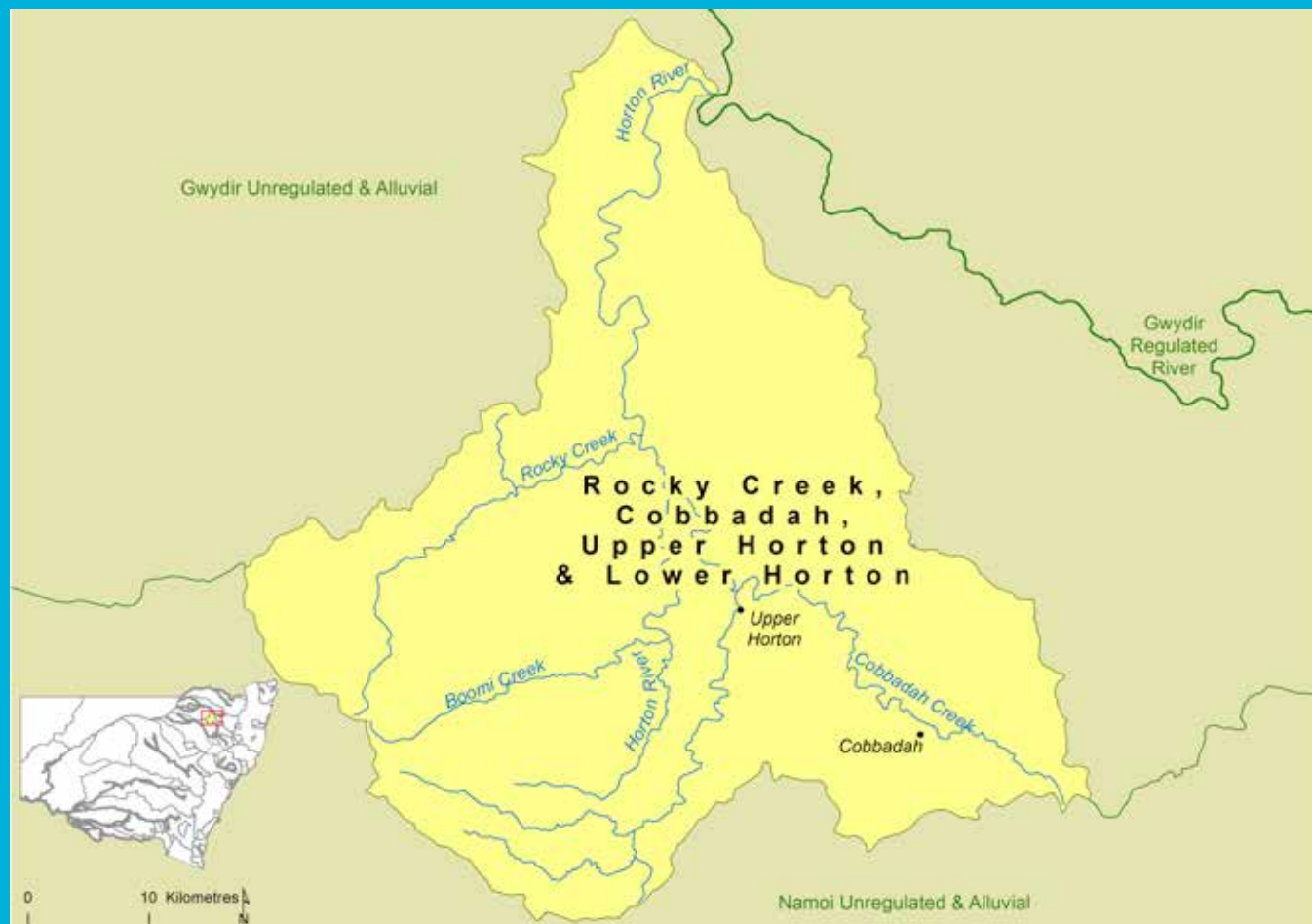
The Richmond River catchment is located on the north coast of NSW and major population centres include Lismore, Kyogle and Casino. The Richmond River drains from the heavily forested upland sections of the catchment into the ocean at Ballina. The north coast and its water resources are under pressure from a rapidly increasing population and a burgeoning tourism industry. Separate WSPs were already in place for Coopers Creek and for the Alstonville Plateau groundwater sources. This macro plan was developed for the remaining water sources and comprises the regulated Richmond River, 21 unregulated rivers and all alluvial aquifers within the Richmond River and Evans Creek catchments.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface water and alluvial groundwater within the planning area. The plan commenced in 2010 and applies for 10 years. The Coopers Creek WSP may be merged with this plan when it is remade in 2014. This would result in a single plan covering the unregulated water sources in the catchment.
2. Does the plan include key assessments?	Yes	The plan's development was based on key assessments of hydrology, socio-economic value and environmental condition, informed by available studies, expert panel knowledge and community consultation.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Detailed information on water use in unregulated rivers is unavailable due to a lack of broadscale metering in these water sources.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes, the achievement of which will be difficult to measure. Monitoring and reporting arrangements are not specific and an implementation program has not been produced.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception for BLR, including consideration of impacts from farm dams. Plantation development is noted but no significant growth in water interception activities is anticipated within the plan's life. Sugar cane drains are required to be licensed under the plan.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises the connectivity between surface water and groundwater, but does not describe integrated management with other WSPs in the area (e.g. Alstonville, Coopers Creek).
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Water requirements of individual assets are not quantified and environmental objectives are broad, making measurement of their achievement difficult. The regulated Richmond River has a set of environmental release rules based on Environmental Contingency Allowance Operations Advisory Committee recommendations. Daily cease-to-pump rules apply to groundwater sources. Environmental water provisions are given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	No specific monitoring arrangements are detailed for this particular plan and no implementation program has been made public. Some information on the plan's effectiveness in delivering its water security objectives may be available from various registers that document available water determinations and trade activity, and from State Water Corporation annual compliance reports. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. There is no quantification of the potential risks to system health or entitlement securities due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan was drafted by an Interagency Panel and public submissions on the draft plan were accepted and responded to transparently. Ongoing stakeholder engagement may occur via the Environmental Contingency Allowance Operations Advisory Committee and is required at the time of the five-year audit of the plan.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been no reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

ROCKY CREEK, COBBADAH, UPPER HORTON AND LOWER HORTON WATER SOURCE WATER SHARING PLAN 2003



Context

The Rocky Creek, Cobbadah, Upper Horton and Lower Horton Water Source covers the unregulated catchment of the Horton River and its tributaries. The plan area is located on the northern slopes of NSW within the Murray–Darling Basin. It is the only major tributary of the regulated Gwydir River. The plan area is mostly undulating grazing and dryland cropping land and surface water use is primarily for irrigation and domestic and stock purposes. The area is considered hydrologically stressed because of high consumptive water demand during the system's summer low flows. Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability is the primary planning driver.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Gwydir Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the plan's water management provisions. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Although the plan does not identify any areas of overuse, the system is considered hydrologically stressed. The plan establishes a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented objectives, strategies and related performance indicators, but monitoring and reporting arrangements for measuring achievement against these are not specific. Most of the plan's objectives are measurable using routinely collected hydrologic parameters, but some ecological objectives will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities such as mining and plantations.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not address groundwater and surface water connectivity.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump levels to protect pool connectivity during low-flow periods, and daily flow-sharing volumes to protect natural flow variability. The environmental water provisions are not based on the watering requirements of in-stream assets, but rather on hydro-ecological assumptions that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. On the basis of this advice, the Minister has recommended replacement of the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not explicitly deal with climate change; rather it assumes the in-built review will provide sufficient adaptive capacity. There are some self-adjustment mechanisms for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive community engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR), but there is no publicly available assessment of how the plan has performed against its objectives. Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

SOUTH COAST GROUNDWATER SOURCES WATER SHARING PLAN (DRAFT)



Context

The draft plan area on the south coast of NSW comprises three groundwater sources, including two hard rock aquifers (Lachlan Fold Belt Coast and Sydney Basin) and one coastal sand aquifer (South East Coastal Sands). These groundwater sources are located in the Southern Management Area and the South East Water Management Area and are overlain by the plan areas of the Tuross, Deua, Clyde, Brogo and Bega, and Towamba rivers. Most bores from the hard rock aquifers are used for stock and domestic purposes; water quality is poor with high salinity levels and extraction rates are low. Although bore yields from the sand aquifer can be quite high, they are self-regulating because of saltwater intrusion and are mostly used for stock and domestic purposes.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	A draft plan is being revised following comments received during the public exhibition period. The plan is expected to commence in 2014.
2. Does the plan include key assessments?	Yes	As per the macro approach for groundwater sources, risk assessment of ecological and socio-economic value was conducted for all water sources in the plan area. The plan allows for information on GDEs to be improved during the term of the plan.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify past overuse or overallocation and, overall, water resources have a low level of risk to aquifer integrity. The plan establishes a LTEL and has provisions for increases to an upper limit defined by the plan, via amendments. The plan also includes measures to adjust available water determinations if the limit is exceeded.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes objectives, strategies and performance indicators that can be measured over the plan's life. The plan does not specify monitoring arrangements and relies on existing programs, which may or may not be appropriate.
5. Does the plan facilitate trade?	To some extent	The plan facilitates trade by creating water access entitlements under the WMA 2000, but prohibits most types of dealings.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan accounts for current and future BLR during the term of the plan, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. The plan also makes provision for potential amendments to include other intercepting activities but these appear to be insignificant at this stage.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The groundwater sources in the plan area have been classified as 'less highly connected'. Therefore, as per the macro approach to groundwater planning, water sources are managed by groundwater rules only.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has clear planned environmental water requirements and responsibility for these arrangements has been assigned. Although monitoring is not a clearly embedded component of the plan, risks to environmental assets are likely to be low under current conditions.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The plan is still in draft, so an assessment of this criterion is not possible at this time. There are several statewide monitoring arrangements in place that can be used to support this plan's purposes. Once operational, the plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges risk to the availability of the resource due to climatic variability. It is not clear whether this variability was quantified and included in the estimate of LTEL. The plan includes mechanisms to constrain water use within limits, and these indirectly account for climatic variability.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan is in draft and up to this stage the macro process has been followed. Much of the information is not yet publicly available.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is still in draft, so an assessment of this criterion is not possible at this time.

STUARTS POINT GROUNDWATER SOURCE WATER SHARING PLAN 2003



Context

The Stuarts Point Groundwater Source is located on the NSW mid-north coast. It covers an area of unconsolidated sand sediments west of the Macleay Arm, between Grassy Head and the Macleay River estuary. The area is characterised by heaths, woodlands, forests and wetlands that depend on groundwater and includes the town of Stuarts Point and the villages of Fishermans Reach and Grassy Head. Groundwater is extracted for domestic water, town water and horticultural purposes. The Stuarts Point Groundwater Source was assessed by the 1998 Aquifer Risk Assessment Report to be at-risk from over-extraction and contamination. Protection of GDEs and prevention of saltwater intrusion into the aquifer are the primary planning drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers groundwater sources within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged, along with the Tomago Tomaree Stockton Groundwater Sources, into the North Coast Coastal Sands Groundwater Sharing Plan being developed at present.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The planning area is considered to be at risk of over-extraction. The plan outlines management arrangements that aim to prevent further hydrological stress, including the establishment of a long-term annual extraction limit. Information explaining the trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented outcomes and strategies for protecting the aquifer's water quality and GDEs. The links between plan strategies and outcomes are not clear, and monitoring arrangements are not provided.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception via the quantification of expected volumes for domestic and stock water use. Several statewide policies guide the management of other potential intercepting activities.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Although the plan is a single resource plan, its management provisions recognise the importance of groundwater to several GDEs and estuarine ecosystems.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements that are designed to deliver the plan's environmental objectives. Monitoring arrangements to assess the effectiveness of the environmental watering provisions are unclear.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Aquifer water quality and water-level monitoring has begun and studies to assess the plan's socio-economic impact were completed in 2006 and 2010. Monitoring of consumptive water use to assess entitlement holder compliance has not been introduced. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not address climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards some outcomes has been made (e.g. provision of tradeable water entitlements, provision of BLR) and water-level monitoring indicates the plan's provisions are adequately protecting the aquifer's water level and water quality. Metering of volumes extracted by water users has not been introduced and therefore it has not been possible to implement some plan provisions (e.g. assessment of long-term average annual extractions against the plan limits, implementing the full range of trading rules). Audits of plan-implementation effectiveness publicly report this information.

TARCUTTA CREEK WATER SOURCE WATER SHARING PLAN 2003

Context

Tarcutta Creek is a highly developed tributary of the Murrumbidgee River located in the south west of NSW. While there are many unregulated waterways in the upper Murrumbidgee catchment, some of the greatest volumes of water for irrigation are extracted from Tarcutta and Adelong creeks. In the 1998 Stressed Rivers Assessment Report, Tarcutta Creek was classified as being under high environmental stress and prioritised for river management plan development. Despite being one of many unregulated rivers in the Murrumbidgee catchment, Tarcutta Creek has been managed under a discrete WSP that commenced in 2004.

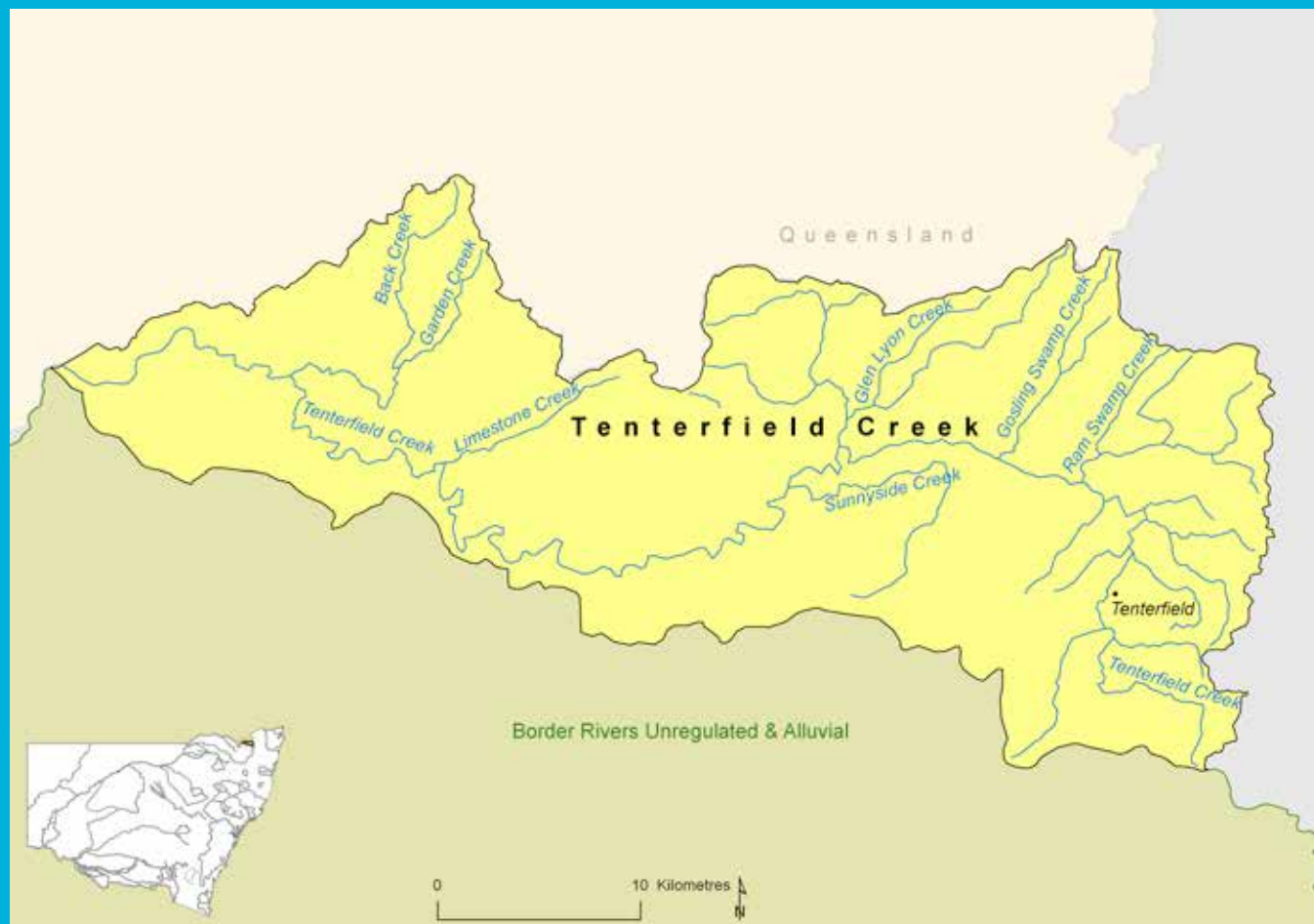


Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Murrumbidgee Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the plan's water management provisions. They are no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information on the trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period. This information is no longer publicly available.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for measuring its effectiveness in achieving all outcomes have not been clearly articulated. While ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement, some trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of forestry and mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	The plan does not quantify the connectivity between surface water and groundwater. The potential impacts on connected systems is acknowledged via reference to maintenance of groundwater to sustain critical surface flows and ecosystems in the plan's objectives.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. Environmental assets and their water requirements are not clearly detailed and monitoring is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Monitoring to assess the effectiveness of the plan's environmental objectives has begun but the results have not been published. In addition, no assessment of the long-term average extraction has been conducted because extraction is not comprehensively metered. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. There is no quantification of the potential risks to system health or entitlement securities due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards implementation of some plan actions, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Comprehensive metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

TENTERFIELD CREEK WATER SOURCE WATER SHARING PLAN 2003



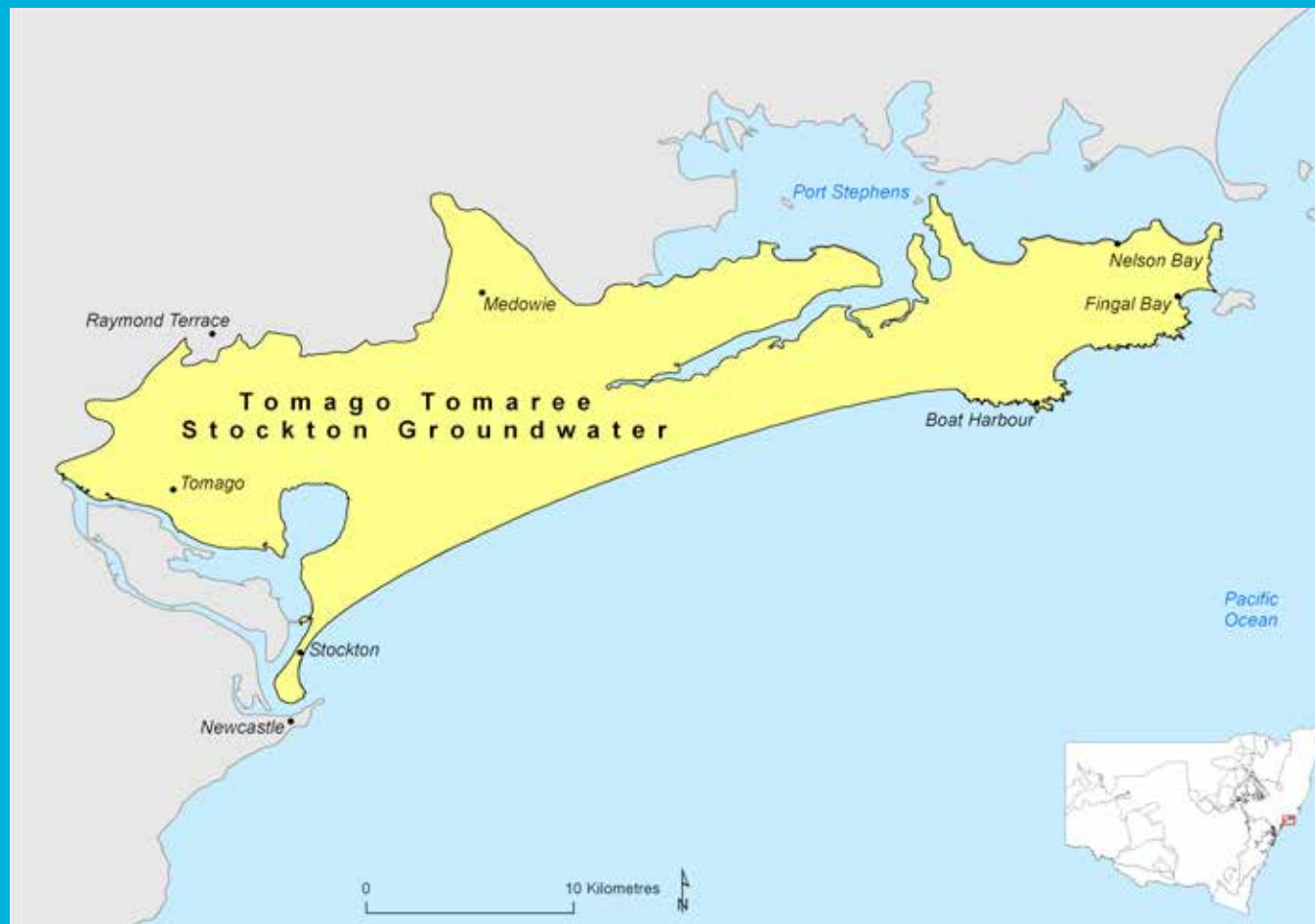
Context

Tenterfield Creek is located in the east of the Border Rivers catchment and is a tributary of the Dumaresq River, which forms part of the state border between Queensland and NSW. In the 1998 Stressed Rivers Assessment Report, Tenterfield Creek was classified as being under high environmental and hydrological stress. Parts of the plan area have high environmental values and a high community dependence on water extraction. Water is used for irrigation, industry, local water utilities, and domestic and stock purposes. Tenterfield Creek experiences extended periods of low flow and the greatest competition for water occurs over the spring and summer months. Although part of the larger Border Rivers Extraction Management Unit, Tenterfield Creek has been managed by a separate WSP that commenced in 2004.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Border Rivers Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	To some extent	Water sharing arrangements detailed in the plan have been based on key environmental and socio-economic assessments provided to, and considered by, the water management committee. These assessments are no longer publicly accessible.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	Although the plan does not identify any areas of overuse, Tenterfield Creek was assessed as a stressed river. The plan establishes an extraction limit at the sum of current entitlement. Provisions for daily flow classes and daily extraction limits depend on the establishment of additional gauging stations and the metering of extractions.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad outcomes, which are linked to the plan's provisions. Monitoring arrangements for measuring plan outcomes are not clearly specified within the plan or its supporting documents.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities, such as mining and floodplain harvesting.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and addresses surface water only. Connectivity and links to surrounding WSPs are not referenced, although the extraction limit is managed under the larger Border Rivers Extraction Management Unit.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements based on the extraction limit, management of flow classes and cease-to-pump conditions on licences. The water required to meet environmental objectives is not quantified and monitoring is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Monitoring to assess the effectiveness of the plan's environmental objectives has not begun. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. There is no quantification of the potential risks to system health or entitlement securities due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

TOMAGO TOMAREE STOCKTON GROUNDWATER SOURCES WATER SHARING PLAN 2003



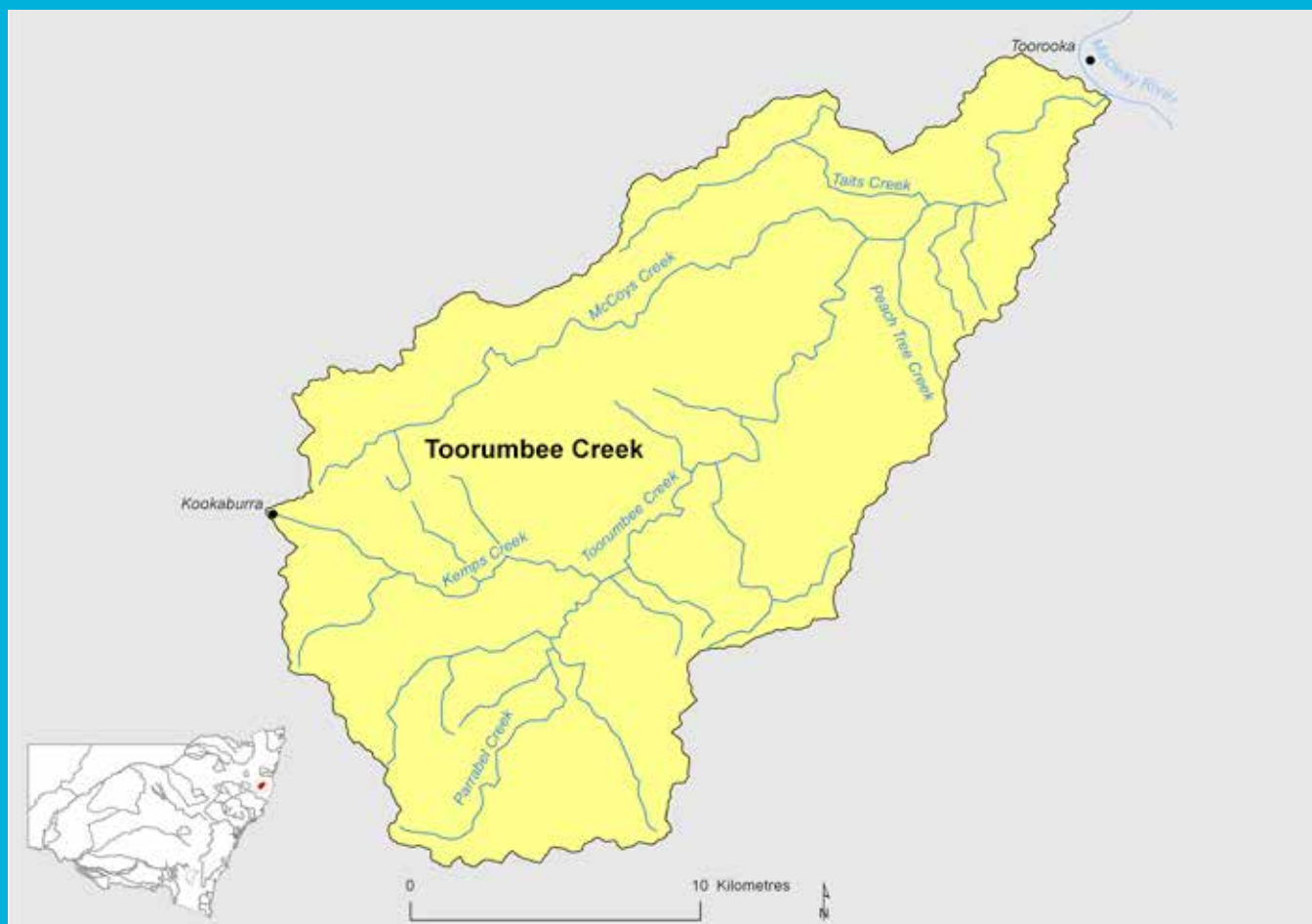
Context

The Tomago Tomaree Stockton Groundwater Sources are located north of Newcastle, extending from the Hunter River estuary in the south, to Port Stephens in the north and Raymond Terrace in the west. The three sand groundwater sources occur along a 10 to 15 km wide coastal strip. The groundwater sources contain good quality water that provides important baseflows to surface rivers and tidal creeks and supports several GDEs (terrestrial vegetation, wetlands, coastal sand dune systems). There are numerous consumptive uses, including supplementing town water supplies for Newcastle and the Tomaree Peninsula, mining, industrial, recreation, irrigation and domestic and stock supply. Rapid residential and tourism development is also occurring in the area. The Tomago Tomaree Stockton Groundwater Sources are considered at high risk from over-extraction and contamination, which the plan aims to equitably and sustainably manage.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers groundwater sources within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged, along with the Stuarts Point Groundwater Sources, into the North Coast Coastal Sands Groundwater Sharing Plan being developed at present.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Although the plan does not identify any areas of overuse, the groundwater source has been assessed as being at-risk from over-extraction. The plan outlines management arrangements that aim to prevent further hydrological stress, including the establishment of a long-term extraction limit. Information explaining the trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented outcomes and strategies that are intended to protect aquifer water quality and nearby GDEs, and maintain the aquifer as a safe urban water supply. Monitoring and reporting arrangements are not specific in the plan or its supporting documentation.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade under the WMA 2000 and defines clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities, such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Although this plan is a single resource plan, its management provisions recognise the importance of groundwater to several GDEs and coastal ecosystems.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental watering arrangements based on a limited understanding of the environmental water requirements of the systems, but does allow for amendments to its provisions based on further scientific studies. Environmental water provisions are given effect by access licence conditions and Hunter Water Corporation's Water Supply Work Approvals are publicly available. The corporation must report annually on its compliance with these conditions.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Aquifer water quality and water-level monitoring exists and several studies to assess the plan's socio-economic impact have been completed. Ecological parameters are also monitored on the Tomago and Tomaree Sand Beds to assess the plan's impact on GDEs. Hunter Water Corporation regularly provides water usage data to NOW and publishes annual usage figures on its website. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not address climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Audits of plan-implementation effectiveness publicly report this information.

TOORUMBEE CREEK WATER SOURCE WATER SHARING PLAN 2003



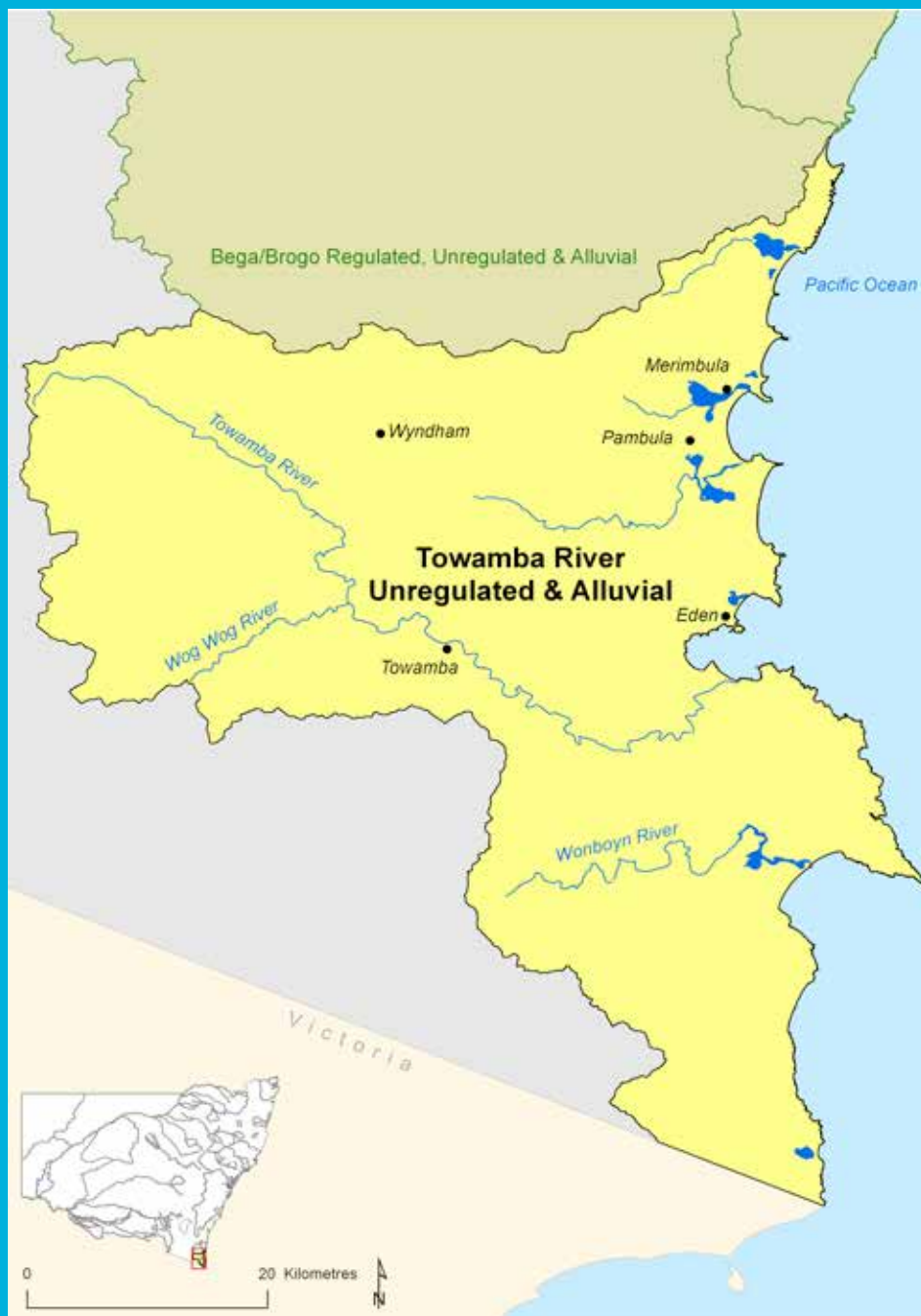
Context

This plan covers surface water resources in the Toorumbbee Creek catchment on the mid-north coast of NSW. Toorumbbee Creek is a tributary of the Macleay River, which enters the Pacific Ocean at South West Rocks. The plan area is generally steep to undulating forested lands, and the creek's headwaters are in Willi Willi National Park. Water use in the catchment is low and at the time of plan development no water licences were issued. The plan area has high conservation values with some near-pristine aquatic ecosystems. The plan has a conservation focus and limits new water access entitlements to domestic and stock or Aboriginal cultural purposes only.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Macleay Unregulated and Alluvial Water Sources WSP being developed at present.
2. Does the plan include key assessments?	Yes	Key assessments informed the plan's primary objective of maintaining the area's high conservation values. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan area is not overused. There are no water access entitlements within the planning area and there is only limited scope to issue new licences (domestic and stock access licences, Aboriginal cultural access licences). The plan prevents the possibility of future overuse by maintaining extraction within the long-term extraction limit for the whole of the Macleay River catchment.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented objectives, strategies and related performance indicators, but monitoring and reporting arrangements are not specified in the plan and supporting documentation. Some of the plan's ecological objectives are broad and their measurement will require considerable effort to assess whether the system's high conservation values are being maintained by the plan's management provisions.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by enabling the introduction of NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. Little trade activity is likely in the system as there is currently no licensed extraction and the plan prohibits trade into the system in order to maintain its high conservation value.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by prohibiting new run-off harvesting dams and accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities, such as plantation forestry.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	The plan is a single resource plan that addresses surface water only, with no reference to integrated management arrangements.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. Most of the system flows are set aside to protect the high conservation values of the water source and any future licensed extraction (domestic and stock or Aboriginal cultural purposes only) will be subject to a cease-to-pump condition and defined extraction limits.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Monitoring to assess the effectiveness of the plan's environmental objectives has not begun as the risk to in-stream values is considered low given the absence of licensed extraction. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements, but it does not quantify the potential risks to system health or entitlement securities under the current climatic regime. The plan does not deal with climate change; rather it assumes the in-built review cycle will provide sufficient adaptive capacity.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition period allowed for broader public input. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of BLR, no approvals for new run-off harvesting dams, prohibiting trade into the water source). There continues to be an absence of licensed water extraction in the plan area and therefore several support systems have not been implemented (e.g. flow monitoring, establishment of flow classes).

TOWAMBA RIVER UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2010



Context

The Towamba Basin plan covers the Towamba River catchment and several coastal catchments to the north and south. The plan area is situated on the south coast of NSW, and includes 22 water sources from Wallagoot Lake to the Victorian border. The towns of Tathra, Merimbula, Pambula, Eden, Towamba and Wyndham are located in the plan area. The Towamba catchment has a relatively high density of estuaries and coastal lakes, some of which are sensitive to water extraction, and 40 per cent of the plan area is national park or nature reserve. Beef grazing is the main agricultural activity, and there is significant harvesting for timber and paper products. Several commercial oyster leases also exist in the plan area. Equitable sharing of water for consumptive and non-consumptive purposes and protecting conservation values are the primary planning drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the surface waters and alluvial water sources within the planning area. The plan commenced in 2010 and applies for 10 years.
2. Does the plan include key assessments?	Yes	Key hydrologic, socio-economic and environmental assessments informed the water management provisions within the plan, including an assessment of the risk to in-stream values posed by the existing or increased extraction.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but does recognise some of the system is hydrologically stressed. The plan establishes a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad objectives, strategies and related performance indicators linked to the plan's provisions. Monitoring arrangements for measuring plan outcomes are not clearly specified within the plan or its supporting documents. Most of the plan's outcomes are measurable using routinely collected hydrologic parameters, but some ecological outcomes will require considerable monitoring investment to assess their achievement.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception for BLR, including consideration of impacts from farm dams. While intercepting activities are not assessed as a significant water resource risk, the plan notes that new plantation developments will be monitored to determine if access licences are required. Statewide policies guide the management of mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises surface water and groundwater connectivity in the planning area and establishes appropriate integrated management arrangements.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan contains environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump levels to protect pool connectivity during low-flow periods, and daily flow-sharing volumes to protect natural flow variability. The environmental water provisions are not based on the watering requirements of in-stream assets, but rather on hydro-ecological assumptions that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan considered climate change in framing access conditions and determining the long-term extraction limit. The plan has strategies in place to deal with the risks posed by long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement provided opportunities for all interested parties to contribute to the plan's development and refinement. Stakeholder input is transparently recorded in the plan's supporting documentation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been no reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

TUROSS RIVER UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN (DRAFT)



Context

The Tuross catchment is located on the south coast of NSW. Major towns include Narooma, Tuross Heads and Bodalla. The draft WSP applies to 21 water resources combining surface water and associated alluvial aquifers. There are no major storages in the catchment area. The catchment contains the southern tip of the Deua National Park and about half the Wadbilliga National Park. Forestry and agriculture are major water users in the catchment. Similar to the Deua Catchment, the Tuross provides habitat for the Australian grayling, and threatened bird and frog species, as well as peatlands, swamps, freshwater wetlands on coastal floodplains and coastal saltmarsh.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	A draft plan is being revised following comments received during the public exhibition period. The plan is expected to start some time in 2014.
2. Does the plan include key assessments?	Yes	As per the macro approach for unregulated and groundwater sources, risk assessment of in-stream value, economic value and community water dependence were undertaken for all water sources in the plan area. These were refined through targeted consultation and will be further amended with input from public consultation concluded in May 2013.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The draft plan does not identify past overuse or overallocation and, overall, water resources have a low level of hydrologic stress. The plan establishes a LTEL (which will be quantified once conversion from non-volumetric licences is completed) and has measures to adjust the available water determination when the limit is exceeded. The effective implementation of the LTEL depends on the ability to meter or accurately estimate water use.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The draft plan includes objectives, strategies and performance indicators that can be measured over the plan's life. The plan does not specify monitoring arrangements and relies on existing programs, which may or may not be appropriate.
5. Does the plan facilitate trade?	To some extent	The draft plan will facilitate trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements. Trading will be enabled once land-based entitlements are converted to volumetric entitlements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The draft plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. No other potential intercepting activities are considered but the plan allows for amendments for future inclusion.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The draft plan accounts for the highly connected nature of surface water and alluvial aquifers and manages the two resources conjunctively in the same plan.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The draft plan has environmental watering arrangements and responsibility for their delivery has been assigned. Monitoring is not a clearly embedded component of the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The plan is still in draft, so an assessment of this criterion is not possible at this time. There are several statewide monitoring arrangements in place that can be used to support this plan's purposes. Once operational, the plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The draft plan acknowledges risk to resource availability due to climatic variability. It is not clear whether this variability was quantified and included in the estimate of LTEL. The plan includes mechanisms to constrain water use within limits, and these indirectly account for climatic variability.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan is in draft and thus far the macro process has been followed. Much of the information is not yet publicly available.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is still in draft, so an assessment of this criterion is not possible at this time.

TWEED RIVER UNREGULATED AND ALLUVIAL WATER SOURCES WATER SHARING PLAN 2010



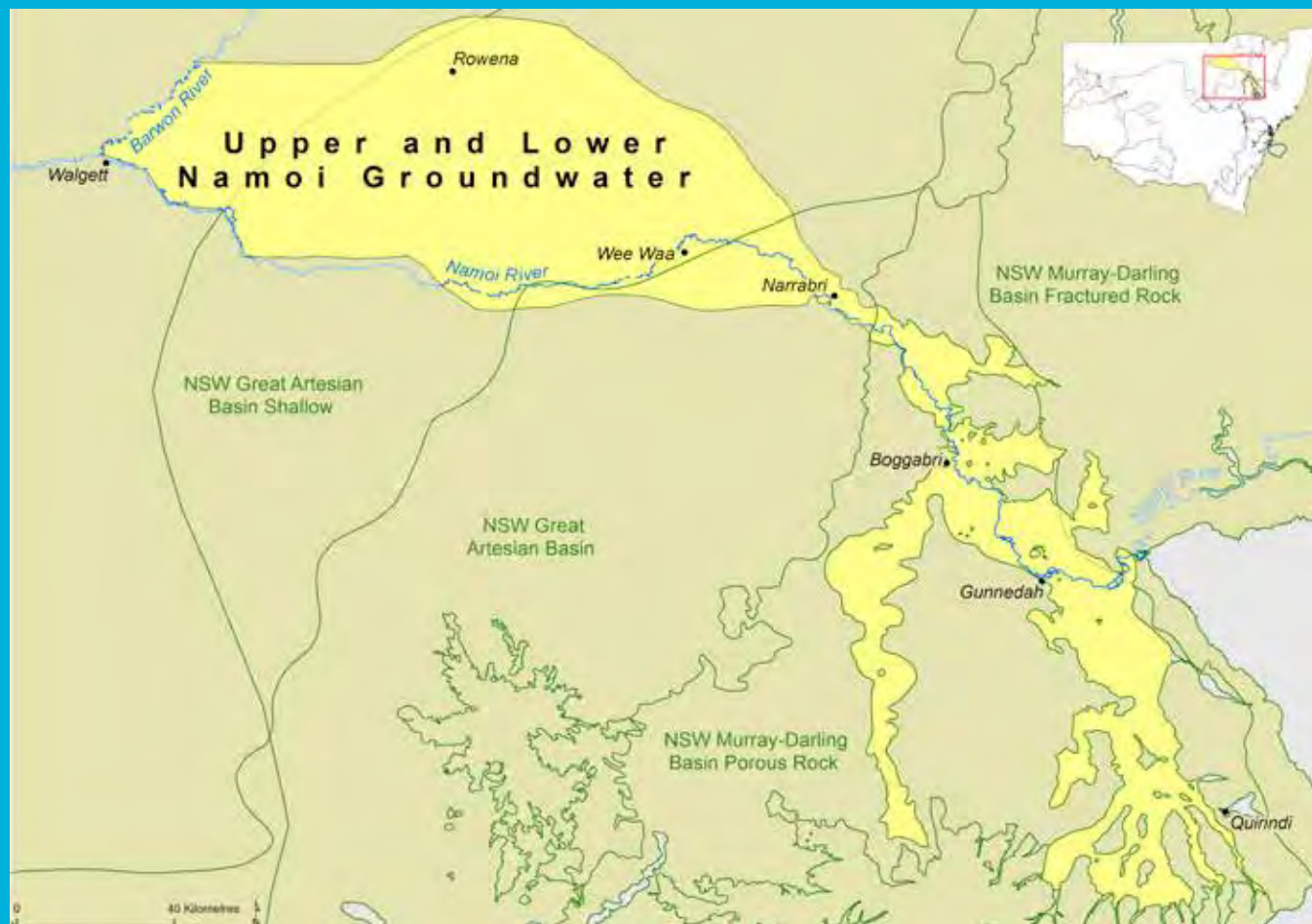
Context

The Tweed River catchment is located in north-east NSW. The catchment includes the major towns of Tweed Heads and Murwillumbah. The largest water use from the Tweed River is that for town water supply, followed by irrigation and domestic and stock use. The rivers of the Tweed catchment have been affected by land clearing, agriculture, human settlement and recreation. The WSP covers the unregulated rivers, creeks and tidal pools, estuaries and alluvial groundwater. Thirteen water sources in the catchment are (or are at risk of being) hydrologically stressed during low-flow periods. During plan development the mid-Tweed water sources were deemed to have high in-stream values at risk of hydrological stress. A process of community consultation and development of water sharing rules was initiated, leading to the commencement of a WSP for the Tweed Unregulated and Alluvial Water Sources in 2010.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the surface waters and alluvial water sources within the planning area. The plan commenced in 2010 and applies for 10 years.
2. Does the plan include key assessments?	Yes	Key hydrologic, socio-economic and environmental assessments informed the water management provisions within the plan, including an assessment of the risk to in-stream values.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse, but does recognise the system is hydrologically stressed. The plan establishes a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad objectives, strategies and performance indicators linked to the plan's provisions. Monitoring arrangements for measuring plan outcomes are not clearly specified within the plan or its supporting documents. Some of the plan's ecological objectives will require considerable monitoring investment to measure their achievement. Most of the plan's objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan addresses interception for BLR, including consideration of impacts from farm dams. The plan can be amended to allow future licensing of forestry interception activities. Several statewide policies guide the management of other potential intercepting activities, such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises surface water and groundwater connectivity in the planning area and establishes appropriate integrated management arrangements.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump and commence-to-pump levels to protect pool connectivity during low-flow periods, and daily flow-sharing volumes to protect natural medium- to high-flow variability. The environmental water provisions are not based on the watering requirements of in-stream assets, but the provisions have been in place for a period of time (before plan commencement) and have adequately protected in-stream values while providing certainty for users.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	With the exception of a list of performance indicators in the plan, there is minimal information on how plan outcomes are to be achieved and progress towards them monitored. Supporting documentation suggests a specific risk-based monitoring program will be developed for the plan. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	While the plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements, it does not quantify the potential risks to system health or entitlement securities under the current climatic regime.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement provided opportunities for all interested parties to contribute to the plan's development and refinement. Stakeholder input is transparently recorded in the plan's supporting documentation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There has been no reporting on plan-implementation progress or effectiveness in delivering its intended outcomes to date.

UPPER AND LOWER NAMOI GROUNDWATER SOURCES WATER SHARING PLAN 2003



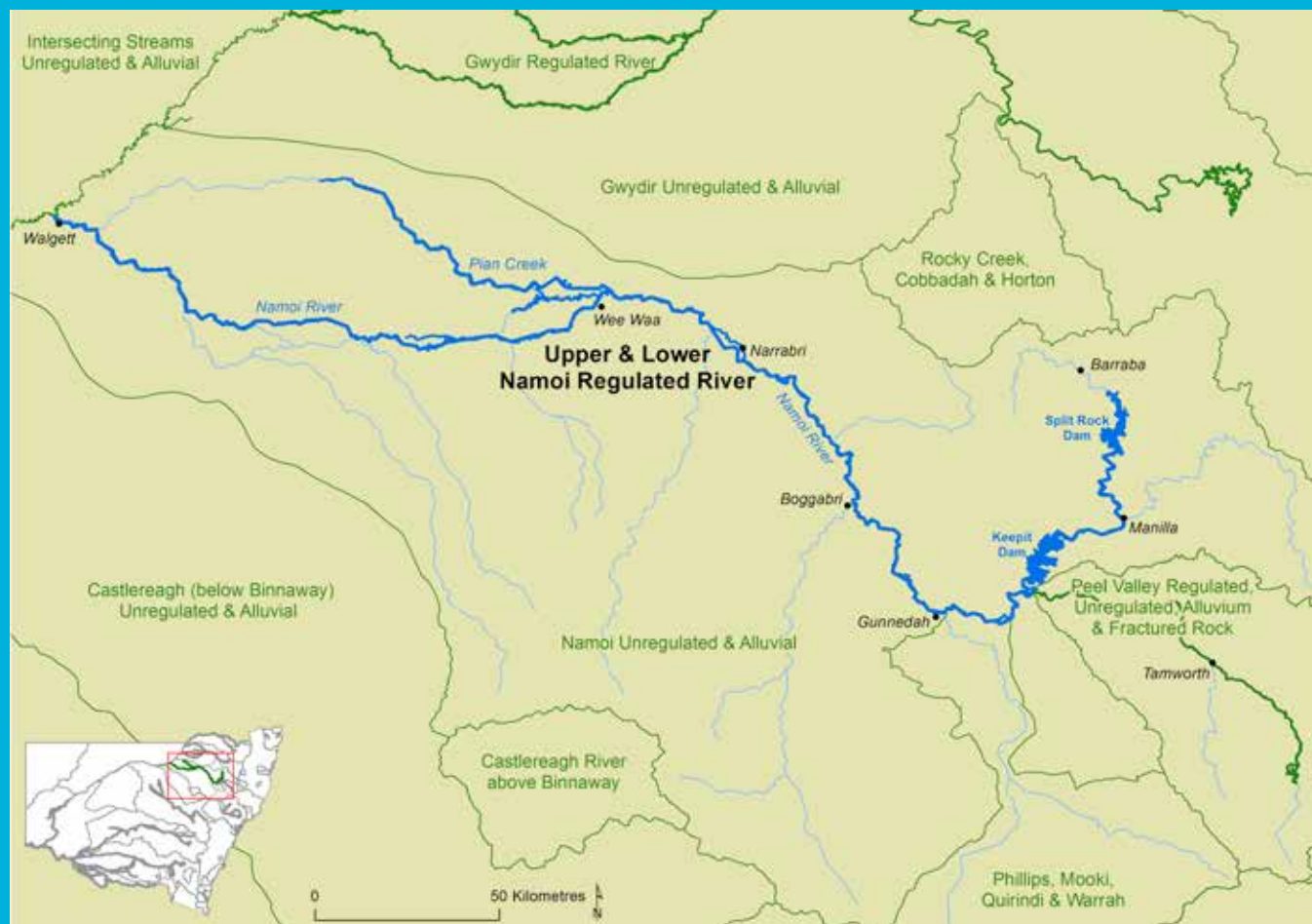
Context

The Namoi Valley lies in northern NSW between the Gwydir Valley to the north and the Macquarie Valley to the south. The Upper and Lower Namoi Groundwater Sources provide water for domestic and stock purposes, as well as for irrigation, industry and town water. Ongoing high demand for water has resulted in the area being identified as one of the most at-risk groundwater resources in NSW. These groundwater sources were included in the Achieving Sustainable Groundwater Entitlements program funded by the NSW and Australian governments. Although much of this groundwater resource is highly connected to the Namoi River, the surface water and groundwater are managed under separate WSPs.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers the Upper and Lower Namoi Groundwater Sources. It commenced in 2006 and applies for 10 years.
2. Does the plan include key assessments?	To some extent	Extraction volumes and the socio-economic importance of this water source have been assessed to some extent, but no information on environmental water requirements and GDEs was provided. The Aquifer Risk Assessment Report (1998) assessed these groundwater sources as highest risk.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan acknowledges that this groundwater source is overallocated. It establishes a long-term extraction limit and reduces entitlements over the plan's life. The plan also allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes broad outcomes which are generally linked to plan provisions. Specific arrangements for monitoring the plan's effectiveness in achieving all outcomes have not been clearly articulated. Ecological and cultural objectives are general and will require considerable monitoring investment to assess their achievement, but trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. The extent of consideration given to likely impacts of coal mine and coal seam gas developments is unclear.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and provides little information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. Environmental assets and their water requirements are not clearly detailed and monitoring arrangements are not described in the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	While groundwater levels and water quality are being monitored and some socio-economic data collected, reporting is limited. Minimal information is available on the achievement of environmental or cultural outcomes, or progress towards these. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Stakeholder engagement occurred during plan development and drafting through the local Namoi Groundwater Management Committee (e.g. targeted consultation in plan development) and through public exhibition of the draft plan. Information explaining the final decision-making process is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made in implementing plan actions and reporting against these. A comprehensive assessment of outcomes is not available. In particular, there is limited evidence that outcomes pertaining to environmental, cultural and water quality objectives have been achieved to date. The five-year audit of plan-implementation effectiveness is now publicly available.

UPPER AND LOWER NAMOI REGULATED RIVER WATER SOURCES WATER SHARING PLAN 2003



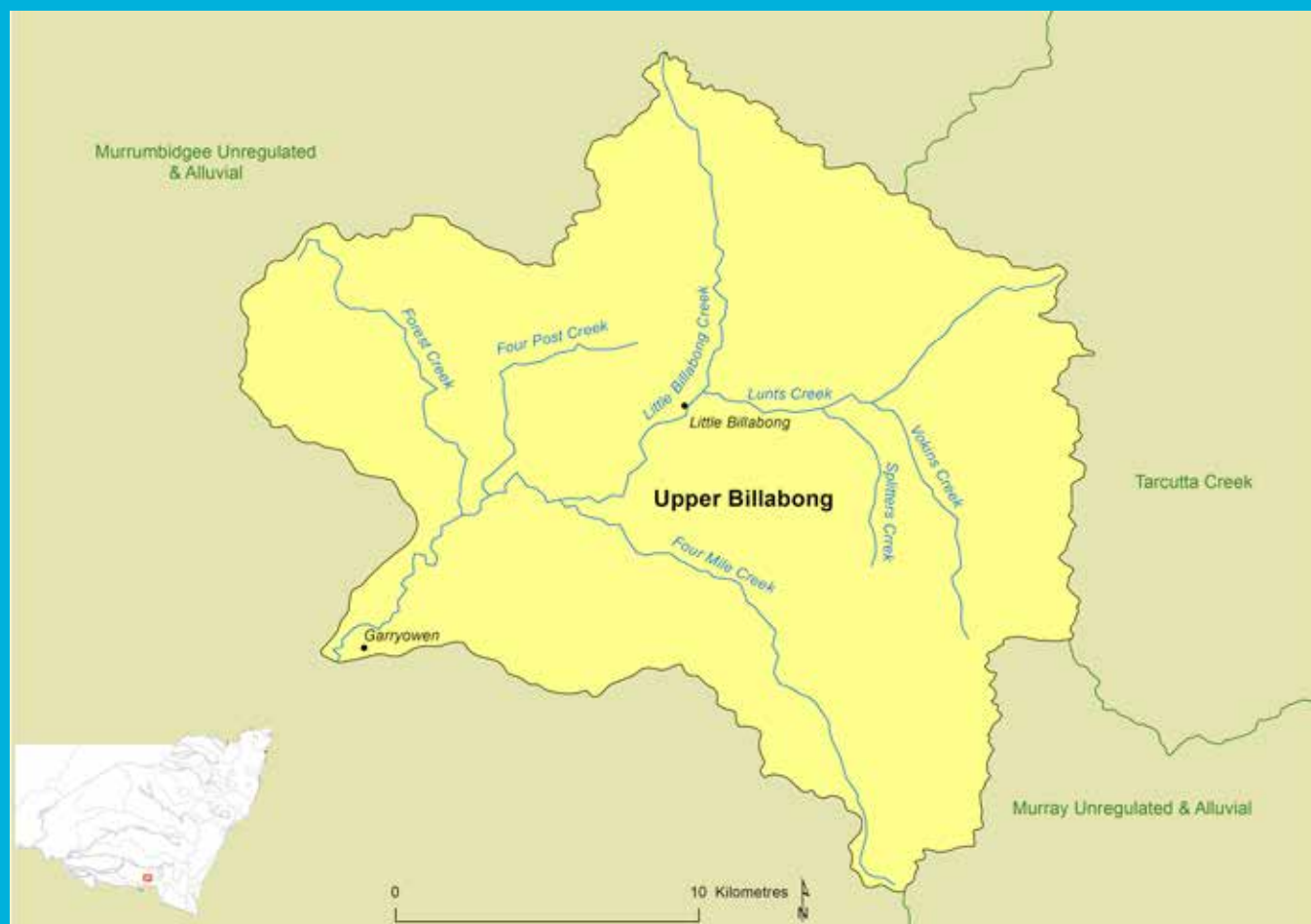
Context

The Namoi Valley lies in northern NSW between the Gwydir Valley to the north and the Macquarie Valley to the south. The major public storages that regulate surface waters in the plan area are Split Rock and Keepit dams. The chief water users in this highly developed river system are general security irrigators, with cotton, livestock production, grain and hay, poultry and horticulture the key industries in the region. The volume and pattern of flows in the Namoi River have been significantly altered by the extraction of water and dam operation, with the frequency of most flood events and end-of-system flows reduced. These changes have affected the environmental health of the river and its wetlands and contributed to water quality problems in the catchment. A key management issue is the equitable sharing of water between competing water users and the environment.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan for the Upper and Lower Namoi Regulated Rivers commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015.
2. Does the plan include key assessments?	Yes	The local Namoi Regulated River Management Committee conducted key assessments as part of plan development and drafting (e.g. hydrological and economic modelling, environmental assets). This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. Information on the environmental and consumptive use trade-offs that underpin the extraction limit are no longer publicly available.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for the measurement of these are not specific. While ecological and cultural objectives are broad and will require considerable monitoring investment to measure their achievement, some trade and extraction objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent and is complemented by the Floodplain Harvesting and Aquifer Interference policies. Statewide regulation and policies guide management of the coal mining and coal seam gas industries. It is now clear that the latter two activities pose a significant risk to the Namoi's surface waters: the Namoi Catchment Water Study suggests that by 2030 the activities may require as much as 45 per cent of existing surface waters used.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. The links between environmental flow provisions and empirical evidence of environmental water requirements are not clear. Environmental water provisions are given effect in Water Supply Work Approvals and the State Water Corporation is required to provide an annual compliance report.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	There is a substantial focus on monitoring in relation to water use objectives but relatively little on objectives for the environment, Aboriginal culture and heritage, and water quality. In general, monitoring has not been clearly linked to plan outcomes. Reporting on environmental outcomes has been limited. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability. Water allocation decisions and critical water supply arrangements are informed by historical climate data. There is no quantification of the potential risks to system health or entitlement security due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. tradeable water entitlements, delivery of BLRs), but monitoring of plan effectiveness is not consistently reported in publicly available documents. None of the evidence examined demonstrated that outcomes pertaining to environmental, cultural or water quality outcomes have been achieved to date.

UPPER BILLABONG WATER SOURCE WATER SHARING PLAN 2003



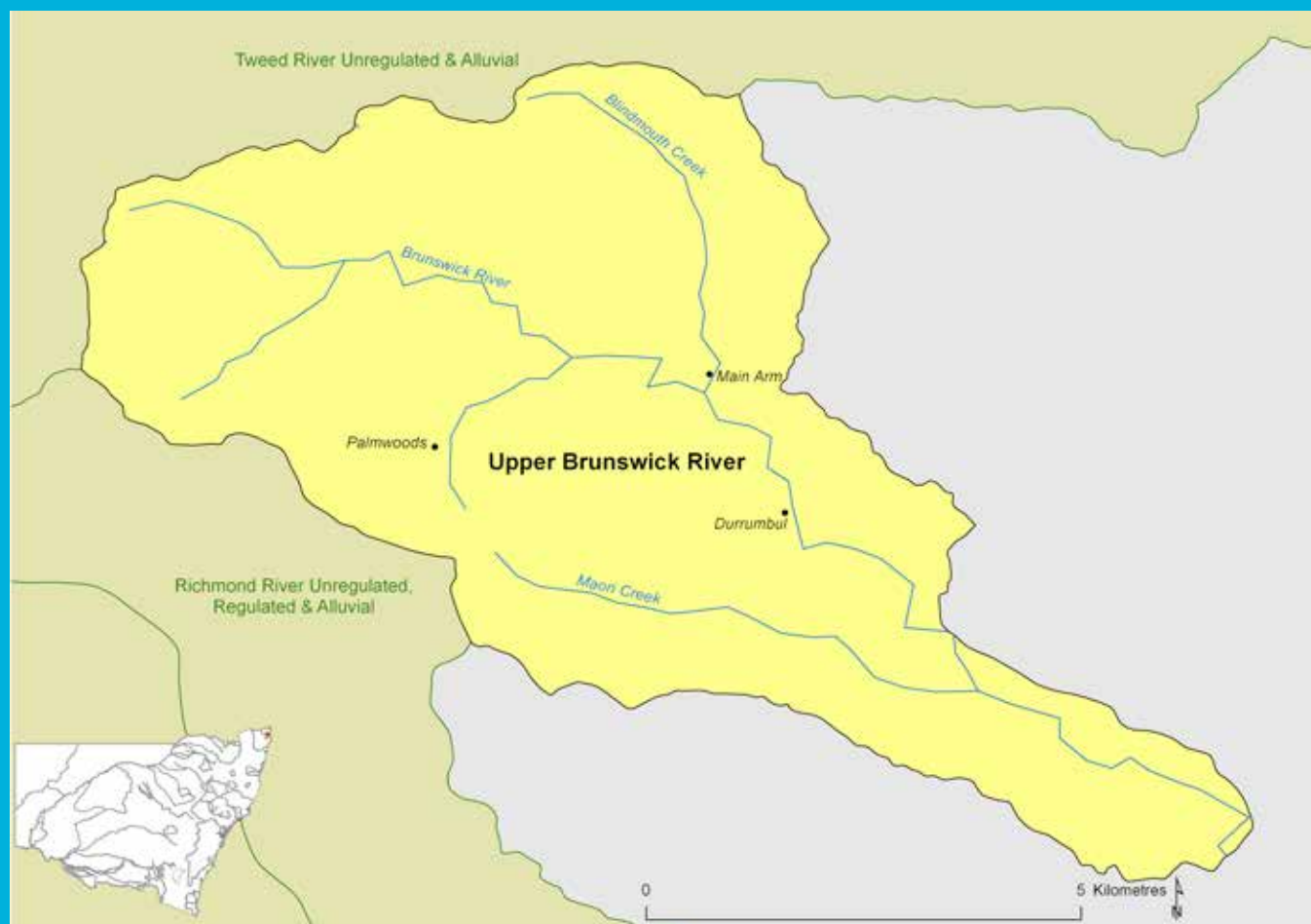
Context

The Upper Billabong Water Source is situated in the South West Slopes region of NSW, to the east of the township of Holbrook. Water uses in the plan area include irrigation, stock watering and domestic water supply. Billabong Creek has considerable variation in its annual and daily flows, and peak demand can exceed supply during the summer months – resulting in high hydrological stress. In the 1998 Stressed Rivers Assessment Report, Billabong Creek was classified as being under high environmental stress and prioritised for river management plan development. A WSP commenced for the Upper Billabong Water Source on 1 July 2004.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Murrumbidgee Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the plan's water management provisions. The 1998 Stressed Rivers Assessment Report categorised the environmental and hydrological stress of this water source.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for measuring its effectiveness in achieving all outcomes have not been clearly articulated. While ecological and cultural objectives are broad and will require considerable monitoring investment to assess their achievement, some trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of forestry and mining interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental watering arrangements and responsibility for their delivery has been assigned. Environmental assets and their water requirements are not clearly detailed and monitoring is not a clearly embedded component of the plan.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Monitoring to assess the effectiveness of the plan's environmental objectives has begun, but results have not been published. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. There is no quantification of the potential risks to system health or entitlement securities due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The draft plan was developed by a local committee that included stakeholder representatives and government agencies. The community was engaged via public meetings, public exhibition of the draft plan and a public submissions process. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made towards implementation of some plan actions, particularly in relation to economic objectives (e.g. provision of tradeable water entitlements, provision of BLR). Comprehensive metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

UPPER BRUNSWICK RIVER WATER SOURCE WATER SHARING PLAN 2003



Context

The Upper Brunswick River is located on the far north coast of NSW. Water sharing in the river has been managed under an individual plan that commenced in 2004. The area's major irrigation activity is irrigated pasture for dairy farming, a nursery and some limited horticultural production. The system also contributes important estuarine flows despite being relatively low flowing. The Upper Brunswick reduces to a string of natural pools in dry periods – typically between September and January – when sections of the river frequently flow below the riverbed. The area is considered hydrologically stressed because of the high consumptive water demand during the system's summer low flows. Equitable sharing of water for consumptive and non-consumptive purposes during periods of low water availability is the primary planning driver.

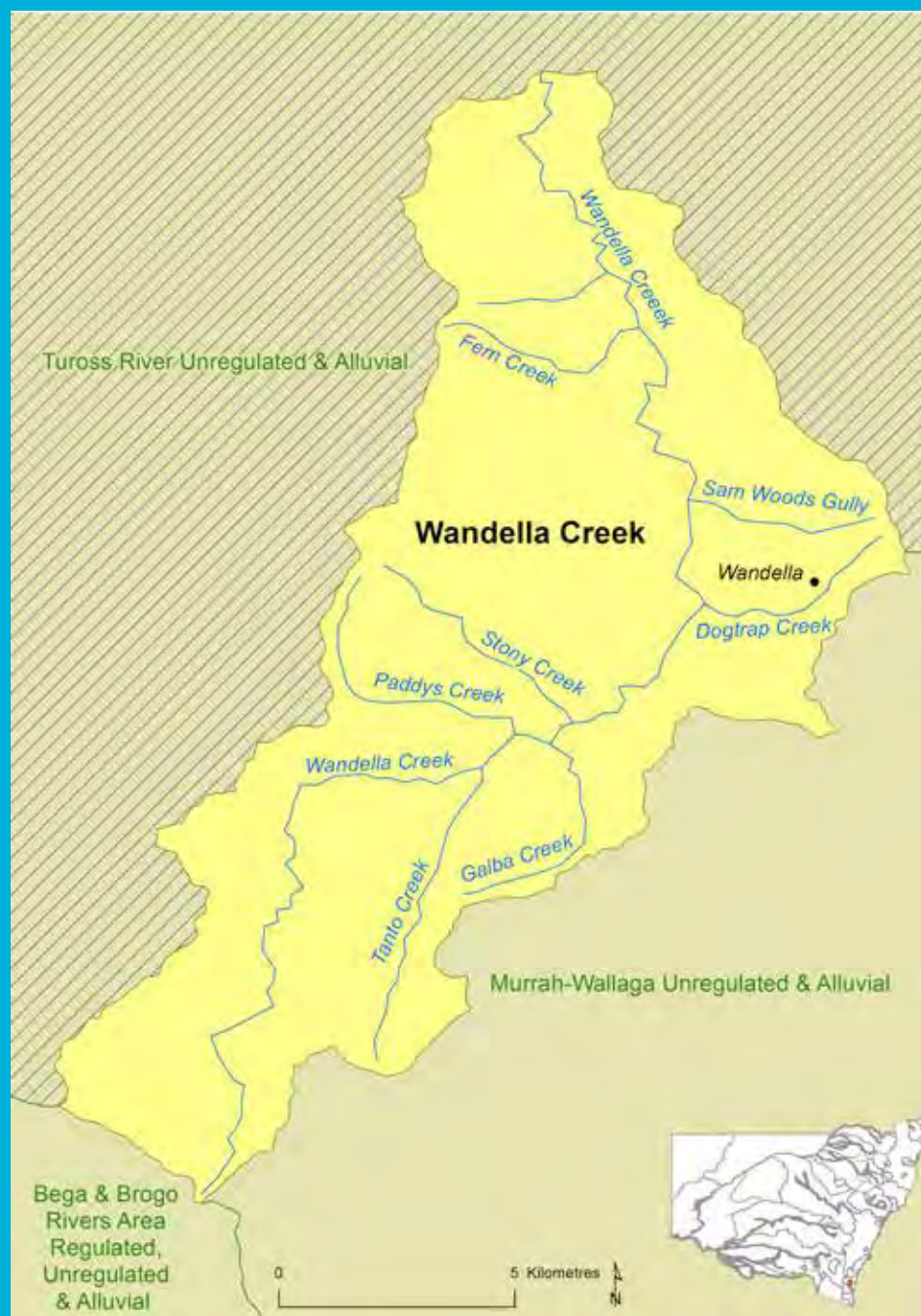
Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface waters within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Brunswick Unregulated and Alluvial Water Sources WSP being developed at present.
2. Does the plan include key assessments?	Yes	Hydrologic, socio-economic and environmental assessments informed the plan's water management provisions. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Although the plan does not identify any areas of overuse, the system is considered hydrologically stressed. The plan establishes a long-term extraction limit and allows for reductions to allocations if the extraction limit is exceeded. Information explaining trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements are not specified.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities, such as mining and plantations.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan that addresses surface water only.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump levels to protect pool connectivity during low-flow periods, and daily flow-sharing volumes to protect natural flow variability. The environmental water provisions have been established based on hydro-ecological assumptions that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. Monitoring to assess the effectiveness of the plan's environmental objectives has not begun. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not explicitly deal with climate change; rather it assumes the in-built review will provide sufficient adaptive capacity. There are some self-adjustment mechanisms for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Plan development involved extensive stakeholder engagement. A stakeholder committee prepared the draft plan, while public meetings and a public exhibition period allowed for broader public input. Information explaining the final decision-making process is not publicly available. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information. A report published in 2011 on monitoring and evaluation activities to assess the ecological and socio-economic performance of each WSP on the north coast concluded there was not yet enough information to assess this plan's effectiveness.

WANDELLA CREEK WATER SOURCE WATER SHARING PLAN 2003

Context

Wandella Creek is located on the far south coast of NSW. The plan area includes a significant proportion of forested public land (around 60 per cent) with much of the remainder cleared for farming. The plan area is considered hydrologically stressed because of the high water demand for irrigation during low summer flows. A draft plan was prepared by the South Coast Water Management Committee in 2002. Although a tributary of the Tuross River, Wandella Creek has been managed under a discrete WSP that commenced in 2004.



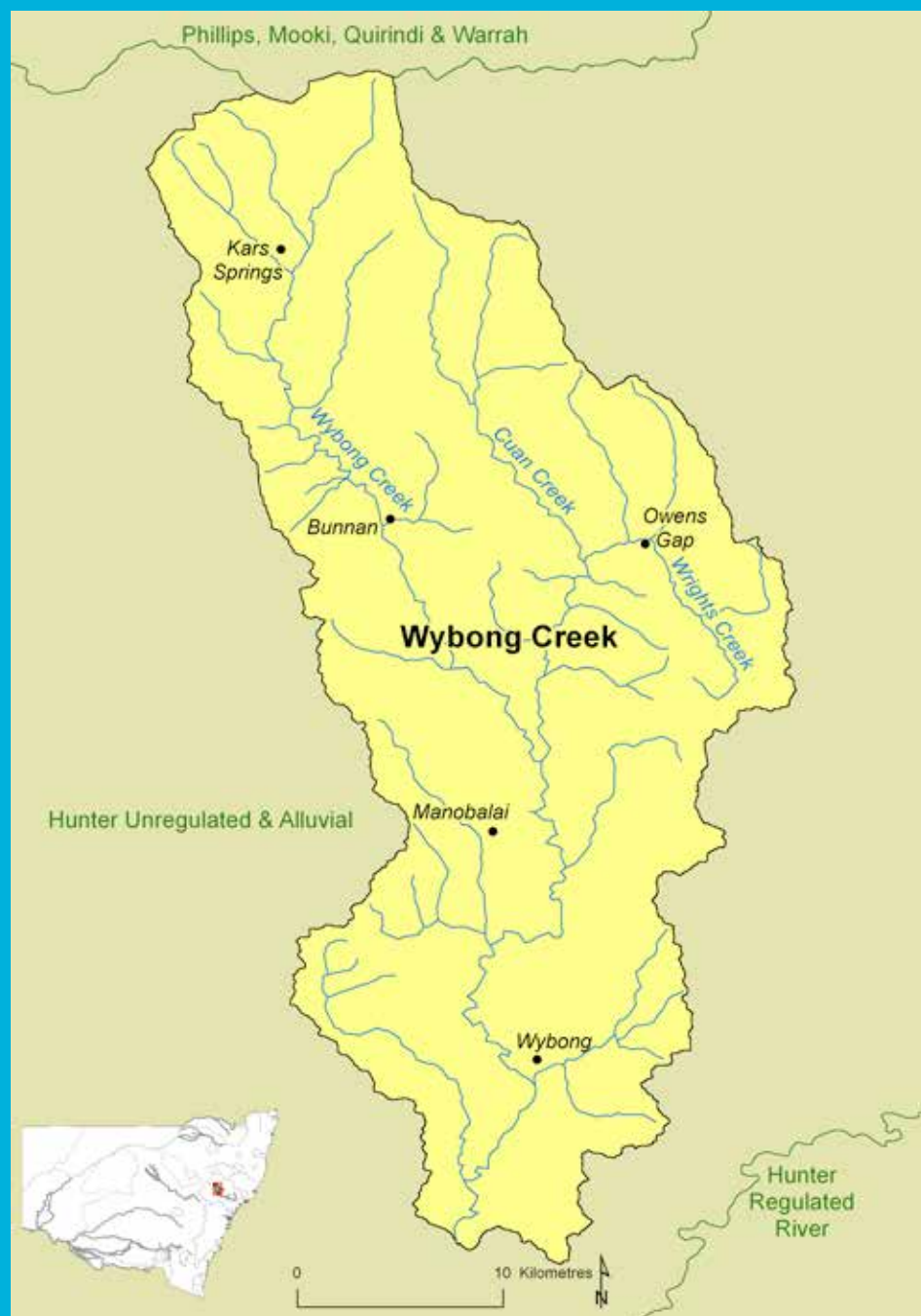
Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A finalised and operational statutory plan covers surface water within the planning area. The plan commenced in 2004 and applies for 10 years. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Tuross Unregulated and Alluvial WSP.
2. Does the plan include key assessments?	Yes	A local water management committee conducted key assessments as part of plan development and drafting. Public documentation of this process has been limited (e.g. environmental asset condition, cultural values, connectivity). The 1998 Stressed Rivers Assessment Report categorised the environmental and hydrological stress of this water source.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It does establish a long-term extraction limit and allows for adjustments to available water determinations if the extraction limit is exceeded. The extraction limit reflects environmental and consumptive use trade-offs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies objectives, strategies and performance indicators, but monitoring and reporting arrangements for measuring its effectiveness in achieving all outcomes have not been clearly articulated. While ecological and cultural objectives are broad and will require considerable monitoring investment to assess their achievement, some trade and entitlement objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates water trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Statewide policies guide the management of forestry and mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	No	This plan is a single resource plan and does not include information on the potential connectivity between surface water and groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has accountable environmental watering arrangements and responsibility for their delivery has been assigned. Monitoring arrangements to assess the achievement of environmental outcomes are not detailed in the plan or supporting documents.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Some monitoring is occurring, however the specific arrangements for monitoring have not been clearly described and comprehensive reporting on plan effectiveness is yet to occur. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013. The plan and its supporting legislative framework provide compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements informed by historical climate data. There is no quantification of the potential risks to system health or entitlement securities due to long-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement occurred during the plan's development through the South Coast Water Management Committee. Public submissions on the draft plan were considered during plan finalisation. Stakeholder consultation informed the plan's 10-year review by NRC and NOW. Consultation details are publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

WYBONG CREEK WATER SOURCE WATER SHARING PLAN 2003

Context

The Wybong Creek Water Source is located in the Hunter Valley. Wybong Creek is a tributary of the Goulburn River, which is a tributary of the highly developed Hunter River. Wybong Creek is an ephemeral stream with considerable variation in its annual and daily flows. Surface water and groundwater are highly connected, with low flows characterised by groundwater inflows to the river. Wybong Creek supports a high level of consumptive water use for irrigation and domestic, stock and farming purposes and is considered hydrologically stressed because much of this is extracted during the system's low summer flows. A WSP, which is one of five that control the overall extraction of water in the Hunter Valley, commenced in 2004 to protect a proportion of low flows for the benefit of the environment and to ensure equitable sharing among consumptive users. The plan was suspended in 2006 due to severe water shortages. Before the plan's suspension, irrigators had been unable to extract surface water or groundwater in excess of 200 consecutive days. The plan's low-flow access arrangements are being reviewed and the plan has not recommenced.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	A finalised statutory plan covers surface waters and alluvial sediments within the planning area. The plan commenced in 2004 and applies for 10 years. The plan's rules of distribution were suspended in 2006 and have not been reinstated. Amendments to enable reinstatement are being progressed. Following the 10-year review by NRC and NOW in 2013, the plan is now under review and due to be replaced by July 2015, when it will be merged into the Hunter Unregulated and Alluvial Water Sources WSP.
2. Does the plan include key assessments?	To some extent	Hydrologic, socio-economic and environmental assessments were conducted to support the plan's development. This information is no longer publicly available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	There were no areas of overuse identified in the plan, but it does recognise the system is hydrologically stressed. The plan establishes an extraction limit and allows for reductions to allocations if the limit is exceeded. Information on trade-off decisions that underpin the extraction limit and access rules was available during the plan's public exhibition period.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly documented but broad objectives, strategies and related performance indicators linked to the plan's provisions. Monitoring arrangements for measuring socio-economic and ecological outcomes are not clearly specified within the plan or its supporting documents. Some of the plan's ecological objectives will require considerable monitoring effort. Most of the plan's objectives are measurable using routinely collected hydrologic parameters.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade by creating NWI-consistent water access entitlements under the WMA 2000 and defining clear trading arrangements.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan addresses interception to some extent by accounting for BLR, but Reasonable Use Guidelines to regulate this type of water use have not been finalised. Several statewide policies guide the management of other potential intercepting activities, such as mining.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises surface water and groundwater connectivity in the planning area and establishes appropriate integrated management arrangements.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has environmental water provisions and responsibility for their delivery has been assigned. The plan establishes cease-to-pump levels to protect pool connectivity during low-flow periods, and daily flow-sharing volumes to protect natural flow variability. Environmental water provisions have been established based on hydro-ecological assumptions that mimicking natural flow variability will protect aquatic ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A comprehensive assessment of the plan's effectiveness in achieving its objectives using monitoring and modelling of ecological, economic and cultural indicators is not available. The NRC and NOW each delivered a 10-year review of the plan to the NSW Minister for Primary Industries in 2013.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges climate variability and deals with this through water allocation decisions and critical water supply arrangements. The plan does not explicitly deal with climate change; rather it assumes the in-built review will provide sufficient adaptive capacity. There are some self-adjustment mechanisms for climate change. The plan's rules for distribution have been suspended since 2006 due to dry conditions and the adverse impact of cease-to-pump provisions on licensed extractors.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder committee prepared the draft plan, while public meetings and a public exhibition allowed for broader public input. Stakeholder consultation informed amendments to the plan's cease-to-pump arrangements, along with the 10-year review of the plan by NRC and NOW. Consultation details are publicly available.

Report card criteria	Assessment	Commentary
12. Have identified outcomes been achieved during the reporting period?	To some extent	The plan's rules of distribution have been suspended since 2006. Progress towards implementation of some plan actions has been made (e.g. provision of tradeable water entitlements, provision of BLR). Metering of volumes extracted by water users has not begun and therefore it has not been possible to implement some plan provisions (e.g. daily flow sharing, temporary water trading, assessment of long-term average annual extractions against the plan limits). Audits of plan-implementation effectiveness publicly report this information.

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4 Victoria

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The context of water planning in Victoria

Victoria covers only three per cent of Australia's total surface area, but accounts for approximately 20 per cent of Australia's water use. About 80 per cent of water use is from surface water systems. Water systems and uses are diverse, and include heavily regulated and developed rivers used for irrigated agriculture in the north that flow into the River Murray; unregulated rivers; large storages that supply Melbourne; internally draining systems in the groundwater-dominant western region; and heritage-listed unregulated rivers with high conservation value in the Gippsland region. Victoria's many water systems are connected through a network of channels, pipes and storages, and substantial investment has been made in water savings and efficiency projects in irrigation districts. Groundwater aquifers vary in size and volume throughout Victoria, accounting for around 37 per cent of water use in the drier western region. Groundwater resources are used for agricultural, industrial and stock and domestic purposes, as well as for augmenting town supply. There are indications that levels are declining over the long term in different parts of the state. Water planning and allocation in Victoria aims to balance the needs of the environment and water users, restore and protect waterway health and facilitate future economic growth.

Unprecedented dry conditions between 1997 and 2010 and recognition of the potential future impacts of climate change are major drivers of how water is planned for in Victoria. In addition, the need to balance environmental and consumptive water use has arisen due to the impacts of water extraction and regulation on the environmental condition of rivers and aquifers. Population growth across the state, in particular the major urban centres, and the increasing dependency on water sources such as groundwater and farm dams have also shaped the priorities for water allocation and planning.

Water planning legislation and framework

Victoria does not have a single statutory instrument that would be defined as a water plan under NWI criteria. Rather, a number of instruments are used in conjunction to manage water resources in the state through entitlement, water planning and waterway management frameworks. The instruments vary according to their purpose, legislative status, geographic scale and the type of water system.

The *Water Act 1989* (WA 1989) provides for the management and allocation of the state's water resources. The state retains overall rights to all surface water and groundwater, with the Minister for Water responsible for granting entitlements to water, setting limits, and the implementation and enforcement of the WA 1989. The planning and allocation framework under the WA 1989 gives priority to resource security and is built on the principle of recognising existing rights and entitlements. Among other matters, the WA 1989 specifies the creation of sustainable water strategies (SWSs), bulk entitlements (BEs), groundwater and streamflow management plans (GMPs and SFMPs) and regional waterway strategies (RWSs).

The Department of Environment and Primary Industries (DEPI) is the main agency with delegated responsibility for implementation of the WA 1989. Some responsibilities under the WA 1989 are also delegated to Victorian water corporations for water planning and allocation decisions and to 10 waterway managers (e.g. catchment management authorities and Melbourne Water) for whole-of-catchment waterway management in their region.

Water planning instruments

Four regional SWSs that cover the entire state were prepared between 2006 and 2011. SWSs identify key risks to water resources and set out actions to address these risks. SWSs also identify actions and set priorities to improve the maintenance and increase the volume of the environmental water reserve.

The entitlement system provides the basis for how water is accessed and shared in Victoria. BEs provide a statutory right to use and supply water in declared regulated water systems and specify water sharing arrangements and operating rules. BEs are held by water corporations and other entities and can be large shares of reservoirs for supply, a primary entitlement or small-scale quantities of water for town supply.

Environmental entitlements (EEs) are also issued for regulated systems and hold similar statutory characteristics as consumptive BEs. EEs are held by the Victorian Environmental Water Holder (VEWH) for the purposes of improving the environmental values and health of water-dependent ecosystems. They are one component of the Environmental Water Reserve (EWR) together with obligations under BEs, management plans and above-cap water.

SFMPs and GMPs are statutory water plans that the WA 1989 requires for water supply protection areas (WSPAs). WSPAs are declared where there is a risk to the resource and stricter management of licensed use is required.

Local management plans (LMPs) apply to many unregulated river and groundwater resources in Victoria's Murray–Darling Basin (MDB) areas. These plans reflect aspects of the statutory management plans but are implemented administratively through the exercise of Ministerial powers under the WA 1989. LMPs outside the MDB compile existing management rules that apply to the resource in one instrument.

Regional river health strategies (RRHSs) were developed under the statement of obligations for Catchment Management Authorities (CMAs) in the WA 1989. Their development was guided by the Victorian River Health Strategy (VRHS), which provided policy direction on setting priorities for investment and management. RRHSs implement these policy directions at a regional catchment scale, establishing objectives for river systems and river reaches, priorities to achieve these objectives and engage communities, and provide an evidence-based case for investment by government. RRHSs are now generally beyond their intended date of use and the next iteration of plans, called RWSs, is under development. RWSs are developed under the direction of the Victorian Waterway Management Strategy (VWMS), which replaced the VRHS in September 2013. The VWMS extends the scope of the VRHS to include the management of estuaries and wetlands for improved integration of surface water management, and describes the arrangements for environmental water delivery in Victoria.

Regional catchment strategies (RCSs) are developed by CMAs under the *Catchment and Land Protection Act 1994* (CaLP 1994) and provide the planning framework for land, water and biodiversity management in each of the 10 catchment management regions of Victoria. Long-term objectives and priorities for action relevant to water, stated in RCSs, are to be implemented through the relevant RWS.

The WA 1989 currently requires a long-term resource review in 2019 to identify any decline in the long-term availability of water and whether changes to entitlements are required. The WA 1989 also specifies powers for the Minister for Water to declare a water shortage and temporarily override existing water entitlements under a process of qualification of rights. There are no compensation arrangements specified in the WA 1989 for these processes.

For Victoria, the Commission has assessed water planning at the surface water catchment scale to allow consideration of the range of instruments that address report card criteria. All existing statutory-based planning and management instruments were assessed against criteria and consolidated to form a view on water planning at this scale. A sample of BEs from each catchment was included in the assessment.

Murray-Darling Basin Plan

The Basin plan was adopted in November 2012 and applies to water resources in Victoria's north located within the MDB. Most provisions of the Basin plan do not take effect for several years, such as SDLs which do not take effect until 2019, but some may influence water planning and management in the shorter term (e.g. environmental water delivery). Where these actions apply in 2013, they have been identified within the relevant Victorian catchment.

Future direction for water planning in Victoria

Victoria has reviewed the WA 1989 and the *Water Industry Act 1994* to update the legislation in light of current policy direction, with a view to reducing duplication and bringing them into one instrument. The water law review acknowledged the complexity of current arrangements, and a Water Bill Exposure Draft released in December 2013 proposed legislation which aims to streamline management and improve clarity for users. The draft bill implements new government policy, including urban water reforms from the Office of Living Victoria, brings into effect actions from the Gippsland Region and Western Region SWSs, and addresses requirements under the Basin plan. Victoria intends to finalise the draft bill in 2014, to commence on 1 January 2016.

Key proposals in the Water Bill Exposure Draft include:

- Updating the objects of the WA 1989 to incorporate whole-of-water-cycle management, extending the licensing regime to include water in local council stormwater works within targeted areas and conferring statutory rights to a water corporation or local council to water in its stormwater works.
- Amending the VEWH's seasonal water plan process to include consideration of environmental water outside held entitlements (i.e. rules based and passing flows).
- Changes to interception management, allowing the Minister to prescribe criteria for assessing reasonable use to avoid misuse of the statutory domestic and stock right, and introducing targeted controls for new forestry plantations in a small number of areas across the state.
- A three-step process to assess risk to water resources – regional resource assessments, strategic reviews and targeted reviews. The resource assessment and strategic review are intended to replace SWSs, while the targeted review would replace the long-term water resources assessment required under the current Act. While regional resource assessments are required every 15 years, the timing for strategic and targeted reviews is not set. Under the current Act, if the Minister determines a decline is shown following the long-term resource assessment, a review must be undertaken and a statement of the actions published within six months. There is no analogous requirement in the draft bill where recommendations are non-binding.
- The development of water resource management orders (WRMOs) which will consolidate and document management arrangements for an area such as a river basin or large water supply system. This is intended to provide improved clarity for users of a resource, where several instruments may currently apply at varying scales – although the timing and coverage of WRMOs is not set. Victoria has advised that WRMOs will, in the first instance, document existing management arrangements in the transition period before the commencement of the new Act.

Table 2: Summary of planning instruments in Victoria

Assessment criteria	State		Region	Catchment			Comment
	WA 1989	VWMS	SWS	RRHSs RWS RCS	SFMP GMP	BE EE	
1. Status of plan	yes	yes	yes	yes	yes	yes	WA 1989 currently requires creation of SWSs, BEs, EEs, GMPs and SFMPs for WSPAs and RWSs. RCSs are produced under the CaLP Act 1994. Victoria has four SWSs, 10 RRHSs, 10 RCSs, 26 WSPAs with eight SFMPs and 10 GMPs, 174 BEs, and 17 EEs.
2. Key assessments		yes	yes	yes	yes	yes	WA 1989 currently requires SWSs to include key assessments and stipulates a 15-year water resource assessment process. RRHSs identify river-related assets, and BEs and SFMPs/GMPs are underpinned by assessments.
3. Overuse status and pathways to sustainable water extraction	yes		yes				SWSs are required to identify actions to recover water for the environment. In some cases they identify overuse in WSPAs. For most systems a cap is in place which limits how much water can be allocated for use. BEs may include passing-flow obligations. Some SFMPs include mechanisms for reduction of extraction through means such as trading rules.
4. Clearly identified and measurable outcomes		yes		yes	yes	yes	WA 1989 contains overarching objectives and SWSs outline guiding principles, policies and actions to improve the management and sharing of regional water resources. They do not set explicit objectives or outcomes. RRHSs set objectives at a catchment scale for the protection of environmental assets. GMP, SFMP and BE objectives are tailored to their specific purpose.
5. Facilitation of trade	yes		yes		yes		WA 1989 specifies rules for trading water shares and BEs. SWSs provide an overview of the water trading framework and have actions to facilitate trade. Localised restrictions and rules on trading are in SFMPs, GMPs and BEs. Trade is also facilitated through the significant data available on the Victorian Water Register.
6. Integration of water intercepting activities	yes		yes		yes		WA 1989 includes regulations for some interception activities. SWSs broadly identify risks related to interception activities and in some cases identify actions to address issues which require legislative amendment to implement. SFMPs focus on quantifying extraction relating to farm dams.
7. Surface water/ground water connectivity			yes	yes	yes		Connectivity is identified in SWSs and some GMPs quantify connectivity. One water management plan (Upper Ovens) includes provisions to conjunctively manage connected resources.
8. Environmental water management arrangements	yes	yes	yes	yes	yes	yes	WA 1989 defines the EWR and establishes the VEWH. The EWR is comprised of EEs, obligations for BEs and 'above-cap' water. SWSs identify water recovery targets and identify actions to increase the volume of the reserve. SFMPs and GMPs stipulate rules such as cease-to-pump, sustainable diversion limits (non-Basin plan) and permissible consumptive volumes (PCVs). RRHSs set out strategies for protecting the environmental health of waterways, including environmental water delivery.

Assessment criteria	State		Region	Catchment			Comment
	WA 1989	VWMS	SWS	RRHSs RWS RCS	SFMP GMP	BE EE	
9. Monitoring, compliance and enforcement provisions	yes	yes		yes	yes	yes	The WA 1989 currently requires the Minister to undertake a continuous program of assessment of the state's water resources. It also requires a review of progress of SWSs. SFMPs require annual implementation reports and regular reviews. DEPI maintains monitoring data systems for surface water and groundwater. Ecosystem health monitoring occurs under RRHSs. Monitoring reports are issued by DEPI, water corporations and CMAs.
10. Planning for climate change and extremes in inflows or recharge	✓	✓	✓	✓	✓		SWSs quantify the impacts of climate change on water availability in the region and provide climate projections. The WA 1989 gives the Minister power to qualify rights in severe water shortages. SFMPs/GMPs stipulate rules to protect minimum flows in dry conditions. RRHSs set seasonal priorities and the VEWH's seasonal watering plan takes into account current climatic conditions.
11. Stakeholder engagement	✓	✓	✓	✓	✓	✓	The WA 1989 stipulates the process of stakeholder engagement when developing SWSs, SFMPs/GMPs and BEs. Consultation is also required for RWSs.
12. Extent to which outcomes have been achieved	✓	✓ ¹	✓	✓	✓	✓	The WA 1989 currently specifies long-term water resource assessments every 15 years. SWSs, RRHSs, SFMPs and GMPs are reported on annually and are required to be reviewed generally within seven to 10 years of implementation.

1 = VWMS only released in September 2013.

Key findings

This section provides updated commentary on the previous report card assessment for Victoria (key findings summarised below) and includes information on significant findings for 2013.

Previous findings

- *The Victorian planning framework is complex and progress in some areas of planning is very slow*
- *The role of planning instruments in addressing sustainable water strategy priorities is unclear*
- *Long-term vision for responding to threats to water resources*
- *Strategic focus supported by robust assessments and inclusive community engagement*
- *Progress towards more accountable environmental watering arrangements*

2013 findings

Implementation of coordinated and accountable environmental watering arrangements

Victoria has established a comprehensive and coordinated framework for the management of environmental water. Waterway managers (CMAs and Melbourne Water) identify priorities and develop watering proposals working closely with the VEWH, water corporations and inter-jurisdictional bodies including the Murray-Darling Basin Authority (MDBA) where appropriate. The VEWH is responsible for making decisions about the most effective use of the environmental water holdings to develop the seasonal watering plan, liaise with other water holders, and provide communications and reporting on environmental watering activities.

Progress towards clearer management arrangements for groundwater and unregulated surface water

SWWs require LMPs for all rivers and aquifers to provide more streamlined and transparent management by consolidating and documenting the different rules applying to the resource in a common instrument. Many systems are now covered by a LMP, which improves clarity for users and provides flexibility under changing conditions. However, the criteria the SWWs state the plans will contain are not fully covered in many of the LMPs, such as the groundwater catchment statements covering the southern part of the state. LMPs for some unregulated surface water systems have not yet been developed. For groundwater resources, there is also the issue that a small number of WSPAs remain without the statutory management plan required to manage risks to the resource. Although many WSPAs have now been abolished as per recommendations in the SWWs, the number of groundwater WSPAs abolished has exceeded recommendations and the basis for abolishing them is not always transparent.

Greater clarity needed for decision-making processes that link environmental outcomes and extraction limits

The complexity of water management instruments prevents a clear line of sight between those which consider the hydrological requirements for identified environmental values and those which manage extraction. Caps on extraction in Victoria have historically been set based on current use of the water resource entitlements. While flow studies were undertaken during the BE development process, it is difficult to see where these technical studies have influenced caps. Where provisions for unallocated water exist in the cap, no clear relationship is identified between the amount allowed for and the environmental objectives of flow studies or RRHSs. In the Northern Region SWS a trade-off process for water recovery decisions using priorities set in the RRHS is described, although the environmental outcomes for the rivers are not stated outside general ecological categories. The Central Region SWS defines environmental water requirements for major rivers and sets out the extent to which government will reduce any shortfalls through investment in water recovery, with an explanation of why residual shortfalls will not be met. The remaining two SWSs do not show links between water recovery actions and environmental objectives, while decision-making processes undertaken in the development of water recovery targets are not clear.

Strategic focus supported by comprehensive and ongoing community engagement

The strategic frameworks for allocation and waterway health decisions – through instruments including regional SWSs, the VWMS, GMPs and SFMPs – are underpinned by significant community and stakeholder engagement to identify community values and determine economic, social, environmental and cultural priorities. Community and stakeholder engagement is continued throughout implementation of the RRHS as part of annual work plan development, and management plans for WSPAs are required to have a consultative committee. The RCS process to determine natural resource management priorities for a region, including water, involves extensive community consultation, and for several regions social research and assessments of community values have been part of this.

Findings against 12 criteria

1. Status of water planning	The planning framework comprises several instruments that together aim to achieve objectives as set out in the WA 1989. Most instruments are at a catchment or regional scale, including SWSs, RRHSs, BEs, SFMPs, GMPs and LMPs. RCSs are prepared under the CaLP 1994. While the WA 1989 requires the development of water management plans for WSPAs, some do not have management plans in place despite being declared several years ago. Management plans are in place for 18 of the 26 current WSPAs, with one in draft form. The VWMS has recently been released and is guiding the development of RWSs that will replace the now dated RRHSs.
2. Do plans include key assessments?	All Victorian instruments are underpinned by hydrological assessments, with more extensive instruments such as SWSs and RRHSs also based on social, environmental and economic assessments. Hydrological, environmental and socio-economic assessments informed development of BEs, and statutory management plans used hydrology models and environmental flow studies consistent with their objectives. The groundwater management framework was informed by an assessment of groundwater resources. RCSs are informed by the Index of Stream Condition (ISC) and the FLOWS assessment methodology is used in developing waterway managers' seasonal environmental watering proposals. The Victorian Environmental Flow Monitoring and Assessment Program will provide a scientific basis for the link between particular flow components and the ecological response to environmental watering. Victoria advises that while trade-off decisions between risks to environmental values and risks to social and economic values are not explicitly specified within instruments, they are carried out during plan preparation. Evidence of this can be seen in the Northern Region and Central Region SWSs, but the process is unclear in other instruments.
3. Do plans prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Overuse is not identified in Victoria's planning instruments, except for the Central Region SWS in relation to management plans for WSPAs. WSPAs are declared where there is a risk to the resource and stricter management of use is required through a statutory plan to ensure its long-term sustainability. Water use is restricted in SFMPs and GMPs through caps limiting levels of take, and in some cases through specifying triggers for rosters, bans or restrictions. Aquifers demonstrating a long-term decline have been identified and not all are covered by WSPAs. For some, restrictions are applied, but the decline of the resource does not appear to be addressed. Victoria identifies environmental water requirements and recovery options for surface water based on environmental flow studies, which can be used to place conditions on licences and BEs. Flow-stressed surface water areas have been identified and managed in a variety of ways including flow rehabilitation plans and the creation of EEs from water recovered through infrastructure projects. The 2010 ISC identifies areas which are under flow stress. It should be noted that in some areas this reflects Victoria's concept of a 'working river' where environmental values are traded off to meet community needs, and a level of flow stress is considered acceptable. SWSs identify potential water recovery for the environment to varying degrees, although the relationship between these and the priority reaches identified in RRHSs is unclear outside the Northern Region SWS. While the VWMS states that studies will be undertaken to determine further water recovery needs for priority waterways as determined in the RWSs, the relationship for the current RRHSs is less clear. In addition, the VWMS states that the major water recovery projects are largely complete or well underway, and no further water recovery is expected other than to meet the requirements of the Basin plan.
4. Do plans include clearly identified and measurable outcomes?	The objectives of each planning instrument reflect their specific purpose. The degree to which planning provisions are linked to objectives varies across the different instruments. SWSs identify guiding principles and set priority actions but contain no explicitly stated outcomes. RRHSs contain specific, measurable actions which are used as surrogates to measure outcomes based on scientific information. Target setting within the VWMS is in the form of 'directional statements' and 'aspirational targets' due to the difficulty in setting quantitative targets for waterway condition at the state level. High-level management and resource condition outcomes are set which will be implemented through RWSs. Despite individual instrument objectives, there is no clear logic of intent for many of the instruments to work in conjunction to achieve outcomes, although more recent instruments are improving in this area.
5. Do plans facilitate trade?	Planning instruments define water trading zones and facilitate water trade. There is a significant body of information available through DEPI online databases which supports water trading. Several established limits and rules exist in Victoria that are typically defined and explained in BEs, statutory management plans and supporting rules and policies. Trading rules are in place largely to prevent adverse impacts on other water users although they can be used to protect environmental values. Groundwater and unregulated river entitlements remain bundled to property rights. Trade in declared WSPAs without plans in place is limited to temporary trades only. Interstate trade of surface water is allowed within the connected southern Murray-Darling systems, and interstate trade of groundwater is covered by the Border Groundwaters Agreement – South Australia-Victoria.

6. Is interception appropriately considered and integrated into plans?	Interception is identified as a risk to water availability in SWSs and addressed to some extent in SFMPs and GMPs. Stock and domestic dams in rural residential areas, identified as a significant use in several regions, must be registered. This does not bring use into the entitlement framework, but allows a more accurate estimation for planning purposes. Mining activities require a licence. Actions within the SWSs to manage interception require legislative amendment to implement, and these changes have been considered in the Water Bill Exposure Draft.
7. Do plans include/address GW/SW connectivity as appropriate?	Connectivity is recognised at a broad level in SWSs and several instruments state that areas of connectivity will be identified and managed. This has been undertaken in a few areas of high use through resource appraisals, and the VWMS has actions to identify high-value groundwater-dependent ecosystems (GDEs). Ministerial guidelines for considering risks to GDEs in licence decisions are to be finalised for Ministerial consideration in mid-2014. The Upper Owens system management plan integrates management of two highly connected systems. Recent LMPs for groundwater systems in northern Victoria include explicit consideration of the effect of groundwater extraction on rivers and other GDEs and define rules to limit impacts. Management of connectivity in the south of the state is less evident.
8. Do plans contain accountable environmental water management arrangements?	EEs, obligations under statutory instruments and above-cap water are components of the EWR. Management of the reserve is set out in the VWMS, with waterway managers responsible for identifying regional priorities and creating an environmental watering plan. The plan is used to develop seasonal watering proposals which form the basis of the VEWH's seasonal watering plan. The VEWH is responsible for managing the delivery of EEs and has added clarity to the process. The VEWH manages its environmental water holdings through liaison with waterway managers and water authorities, and prioritises watering activities under a range of climatic scenarios to develop its seasonal watering plan. RRHSs also set actions to protect and maintain environmental assets. BEs can have environmental water provisions; for example, as part of the BE passing-flow obligations (although the level of detail varies).
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Monitoring and reporting is largely in relation to the achievement of actions, allocation levels, and flows or water levels rather than against specific environmental or socio-economic outcomes. Monitoring occurs against statutory management plans and BE obligations, and to gauge stream condition, water use, trade activities, cap compliance, and groundwater levels. Reporting is carried out by DEPI, waterway managers, water corporations and the VEWH. Despite no statutory requirement to implement SWS actions, there is a requirement for reporting against implementation through the DEPI annual report. However, this does not contain specifics of all actions completed or details about whether timeframes have been met. While there is no reporting requirement for groundwater management outside of WSPAs, data within DEPI's monthly water reports, the annual Victorian Water Accounts and WSPA annual reports allow some evaluation of the effectiveness of management arrangements. Priority waterway condition is periodically assessed through the ISC, IWC and the pilot IEC. The VWMS states that because government funding cannot address all waterway management issues in every waterway across Victoria, community groups are used in areas that are a local priority, supported by a facilitator (e.g. Waterwatch). Licence conditions on BEs require a resource manager to monitor entitlement holder compliance and water corporations administer compliance and enforcement regimes in relation to entitlements.
10. Do plans deal appropriately with climate change and extremes in inflows or recharge?	Victoria applies a seasonally adaptive approach to waterway management, described in SWSs and the VWMS. This approach provides a mechanism to manage the waterway health program based on an annual assessment of water availability. It aims to enable management that can accommodate variability in water availability associated with climate change, as well as natural events such as drought, fire and flood. SWSs outline climate change scenarios and threats to water availability out to 2055 as part of their long-term approach. Other planning instruments such as BEs and SFMPs include mechanisms to decrease use when water availability decreases. The more recent BEs have a condition which requires review of the entitlement in a specified timeframe in light of information on climate change impacts on the water resource.
11. Is stakeholder engagement in the planning process adequate?	The water management framework is underpinned by extensive engagement processes. There was considerable stakeholder engagement in the development and implementation of SWSs, the VWMS, RRHSs and statutory management plans. Stakeholders are provided with opportunities to engage – either through submissions, representative committees or public fora – and information is readily available. While not clearly documented, BEs were developed using local community and interagency engagement. A public notice must be issued when a BE is amended.
12. To what extent have identified outcomes been achieved during the reporting period?	SWSs do not identify outcomes and the lack of detailed information reported for SWS implementation further restricts the ability to assess achievement. Compliance with caps can be clearly seen, and RRHS reporting and ISC monitoring is more specific about progress towards objectives within the strategies. The Victorian River Health Program Report Card, produced every four years, provides progress against statewide river health targets, including water recovery achieved and environmental watering outcomes. While progress against actions and objectives in individual instruments can generally be determined, the complex nature of the water planning framework in Victoria makes it difficult to assess progress against the range of objectives in the WA 1989.

Glossary and abbreviations

Term	Acronym	Definition
Bulk entitlement	BE	A statutory right to water held by water authorities. 'Source' bulk entitlements allow users to harvest water directly from water sources. 'Delivery' bulk entitlements are entitlements supplied from a water corporation's dam.
Catchment management authority	CMA	Statutory bodies established under the <i>Catchment and Land Protection Act 1994</i> responsible for river health, catchment planning and waterway, salinity and water quality management.
Department of Environment and Primary Industries	DEPI	The Victorian department with primary carriage of WA 1989 implementation.
Environmental entitlement	EE	A water entitlement held by the VEWH permitting use of water in a river or storage for a purpose that benefits the environment.
Environmental operating strategy	EOS	Environmental operating strategies outline the principles behind environmental water releases provided by the environmental entitlement, and the procedure for deciding on the annual watering plan.
Environmental Water Reserve	EWR	The share of water resources set aside to maintain the environmental values of a water system that are dependent on the environmental condition of the system.
Groundwater catchment statement	GCS	A local management plan prepared at the groundwater catchment level by Southern Rural Water for groundwater resources within its jurisdiction. A compilation into one document of existing management rules which apply to the resource.
Groundwater management plan	GMP	A statutory management plan prepared for a water supply protection area to manage the groundwater resources.
Index of estuary condition	IEC	Currently in draft form, the IEC will provide a statewide assessment of the environmental condition of estuaries.
Index of stream condition	ISC	Statewide study of the environmental condition of priority rivers that integrates the condition of river hydrology, water quality, streamside zone, physical form and aquatic life.
Index of wetland condition	IWC	The IWC measures aspects of a wetland's soils, plants, water, hydrology, physical form and catchment to provide an assessment of its health (condition).
Interim management rules	IMRs	Interim rules applied on a temporary basis after the water supply protection area is declared and before the management plan is approved.
Local management plan	LMP	Local management plans describe the resource, management objectives and specific rules for restrictions, carryover (if applicable) and trade.
Murray–Darling Basin	MDB	
Permissible consumptive volume	PCV	The total amount of water that can be taken in a groundwater management area.
Qualification of rights		The Minister of Water declares a water shortage and qualifies existing water entitlements to reallocate water to priority uses.
Regional catchment strategy	RCS	The RCS is the integrated planning framework for land, water and biodiversity management in each of the 10 catchment management regions of Victoria.
Regional river health strategy	RRHS	A regional strategy developed by CMAs to provide a framework that will protect or improve the health of priority rivers. To be superseded by regional waterway strategies prepared under the Victorian Waterway Management Strategy in the near future.
Seasonal watering plan	SWP	The plan describes the statewide priorities for environmental water use in the next season.
Streamflow management plan	SFMP	A statutory management plan prepared for a water supply protection area to manage unregulated surface water resources.
Sustainable water strategy	SWS	A statutory-based regional strategy for the strategic planning of water resources across four regions.
Victorian Environmental Water Holder	VEWH	Independent statutory body responsible for holding and managing the EWR from July 2011.

Term	Acronym	Definition
Victorian River Health Strategy	VRHS	The former statewide strategy outlining the requirements for regional river health strategies, now replaced by the Victorian Waterway Management Strategy.
Victorian Waterway Management Strategy	VWMS	Replaces the Victorian River Health Strategy and incorporates management of rivers, estuaries and wetlands.
Water corporations		Water corporations are established under the WA 1989 with the responsibility to supply water for urban, irrigation, domestic, stock and commercial use in irrigation and water districts.
Water supply protection area	WSPA	An area declared under Section 27 of the WA 1989 to protect the area's groundwater or surface water resources through the development of a management plan.
Waterway manager	WM	The 10 CMAs and Melbourne Water.

Planning areas

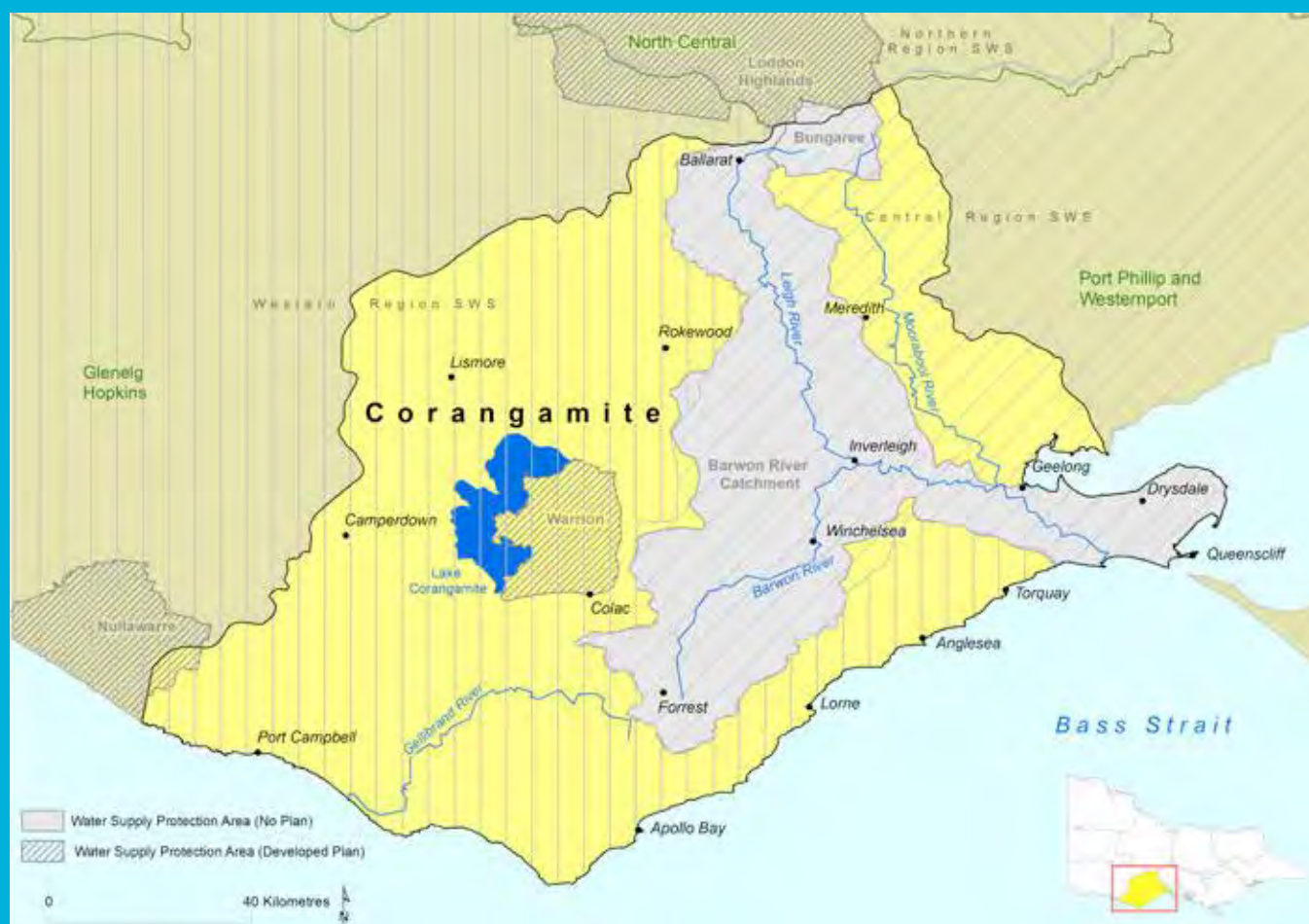
Victoria



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CORANGAMITE CATCHMENT



Context

The Corangamite catchment is located on the south-western coast of Victoria and includes most of Ballarat and Geelong. The four major river basins in the catchment are the Moorabool, Barwon, Lake Corangamite and Otway Coast. The Moorabool River is considered one of the most heavily committed and flow-stressed rivers in Victoria. The catchment includes an extensive system of lakes and wetlands including a number of Ramsar-listed sites. Groundwater is used to augment urban water supplies and demand for surface water irrigation is low in the east of the catchment due to relatively high rainfall. Land use varies by subcatchment with forested areas in the east, where systems are more ecologically healthy than in the cleared agricultural land in the west. Threats to water resources include highly altered flows in regulated systems, climate change, water quality, high urban demand and development and loss of in-stream habitat. Responsibilities for water planning and implementation are split between DEPI, Barwon Water, Central Highlands Water, Wannon Water, Southern Rural Water Corporation and Corangamite CMA.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The catchment is in the Central Region SWS and Western Region SWS areas. Other relevant planning instruments include the Corangamite RRHS, 2013 iteration of the Corangamite RCS, 15 consumptive BEs, and EEs for the Barwon and Moorabool rivers. The Warrion GMP is the only commenced plan out of three declared WSPAs. Management rules for groundwater are collated within three groundwater catchment statements (GCSs). The Corangamite RRHS is soon to be succeeded by the Corangamite RWS (not yet drafted).
2. Does the plan include key assessments?	Yes	The SWSs contain key hydrological, socio-economic and environmental assessments. The RRHS includes a detailed assessment of environmental, economic and social values and risks for river assets. The RCS draws on the RRHS assessments to identify priorities for rivers. Key assessments informing the Warrion GMP were almost 10 years old. GCSs used assessments from the Victorian groundwater management framework.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	Most areas have entitlement caps through PCVs, SDLs or limits in BEs. The Central Region SWS defines environmental water requirements for major rivers, with targets and a timetable for water recovery. Where requirements will not be met, the trade-offs are explained. This process is not clear in the Western Region SWS. Considerable water recovery has occurred but it is unclear whether targets have been met. There are limited arrangements in place for the flow-stressed Moorabool River. Although Warrion is the only WSPA with the required statutory plan, long-term groundwater levels are noted as declining. The trade-off process to set levels of extraction in planning instruments is generally not transparent.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWSs contain 'guiding principles' that include broad outcomes but they are not clearly linked to or measurable against actions. The RRHS identifies river health objectives, risk-based management actions and resource condition targets. The Warrion GMP and GCSs have objectives with an outcome at a general level. There are no explicit performance indicators to determine achievement of these outcomes.
5. Does the plan facilitate trade?	To some extent	Trading is generally well established in the regulated rivers and facilitated through legislation, planning instruments, Ministerial orders and statutory plans. The SWSs outline actions to facilitate trade and describe the trading framework. The WA 1989 prohibits permanent trade in the WSPAs without an approved plan. In unregulated systems transfers are generally limited to downstream with a 20 per cent reduction, or to winter fill. BEs are able to be traded. In unregulated and groundwater systems entitlements remain bundled.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWSs and Warrion GMP identify and quantify interception by farm dams, land use change and bushfires, but there is limited information on other potential intercepting activities such as the open-cut coalmine in Anglesea. The Western Region SWS proposes declared intensive management areas to manage some new forestry activity. The facility to do this is in the Water Bill Exposure Draft. The Warrion GMP estimates unlicensed stock and domestic use. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Areas of connectivity are identified in the SWSs but systems are not conjunctively managed or the level of connection quantified. The Western Region SWS discusses connectivity with respect to GDEs in a general sense and recommends more detail within LMPs, but this is not yet evident in the GCSs. The Warrion GMP does not provide connectivity estimates but aims to maintain groundwater flow towards the lakes through trading guidelines and, if necessary, pumping restrictions.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The Western Region SWS proposes precautionary caps for unregulated rivers, and investigations to improve environmental outcomes. Environmental water is provided to the Moorabool and Barwon rivers through an EE managed by VEWH in accordance with annual plans developed jointly with the CMA. Passing-flow provisions are provided in many of the BEs, although distinguishing between environmental flows or stock and domestic use is difficult. There are no environmental provisions in the Warrion GMP.

Report card criteria	Assessment	Commentary
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The SWSs do not indicate how outcomes will be monitored. The RRHS sets condition targets with associated monitoring and reporting. Waterway condition is assessed through the ISC, IWC and the pilot IEC. Compliance with passing-flow obligations and PCVs are reported for BEs and licences. Monitoring for the Warrion GMP determines compliance with water level and quality objectives. GCSs and LMPs are to be reviewed every five years. While resource monitoring (water levels, flows, extraction volumes) is extensively reported on the DEPI website, alignment of monitoring results with the often general objectives of planning instruments is difficult to assess.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWSs provide long-term climate change scenarios and potential threats to water availability and set out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations, qualification of rights). Flexibility for water entitlement holders through trade is designed to help with adapting to change, and environmental water management through the RRHS aims to build resilience in ecosystems to cope with extreme events. Climate variability was considered in the Moorabool EE. The Warrion GMP notes risks due to climate change are to be addressed via periodic plan reviews.
11. Is stakeholder engagement in the planning process adequate?	Yes	Formal stakeholder engagement occurred during development of the SWSs, RRHS and Warrion GMP. This included consultative committees, public meetings and public submissions with published responses. Legislation outlines requirements for BE stakeholder engagement, although evidence of consultation is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Current monitoring and reporting is largely about achievement of actions, allocation levels, and flows or water levels rather than environmental or socio-economic outcomes. Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Achievement of some objectives related to the GMP has been reported in annual reports. Annual reports by the CMA and water corporations and the Victorian Water Accounts provide information relating to objectives of the RRHS and BEs. The VEW reports on the use and short-term effect of its delivered environmental water.

EAST GIPPSLAND CATCHMENT



Context

East Gippsland is located in the state's far east and is characterised by near-pristine and highly variable river systems, which are among Victoria's most valuable environmental and heritage assets. Major systems within the catchment include the Mitchell, Nicholson, Tambo, Snowy and Far East Gippsland river basins. The Mitchell River is the largest remaining system in Victoria without a large on-stream dam and most of the rivers in the catchment have close-to-natural flow regimes. The only regulated river is the Nicholson River below Nicholson Dam. Major water uses in the catchment include dairy, horticulture and town supply, although the region also depends on the natural condition of its rivers for an increasing tourism industry. The most recent ISC report showed improvement in ecological condition for several subcatchments. Water is available in the Mitchell and Tambo rivers for consumptive use, but only in wetter months. The opportunity to share available water between consumptive users and the environment is a key driver for water planning in the catchment. Responsibilities for water planning and implementation are split between DEPI, East Gippsland Water Corporation, Southern Rural Water and the East Gippsland CMA.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The catchment is in the Gippsland Region SWS. Other relevant planning instruments include the East Gippsland RRHS, the 2013 East Gippsland RCS and nine BEs including the Snowy River EE. A draft RWS (the next iteration of the RRHS) was released for comment in January 2014. Management rules for groundwater are collated within GCSs and the East Gippsland, Mitchell, Tambo and Snowy river basins have LMPs.
2. Does the plan include key assessments?	Yes	The SWS contains key hydrological, environmental and socio-economic assessments. The RRHS has a detailed assessment of environmental, economic and social values and risks for river assets. GCSs used assessments from the Victorian groundwater management framework. The development of the RCS included risk assessments for identified priority assets. Limited information is available on assessments undertaken for the declared WSPAs.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	No areas of overuse are identified in the planning instruments. Several measures are in place across the catchment to cap diversions and limit extraction. Triggers for restrictions are not described for most resources in GCSs. While areas of overuse are not explicitly identified in instruments, the ISC notes a small proportion of streams, particularly the Snowy River, are under extreme flow stress. The Snowy River is fully allocated and a cap on diversions is in place. The Water for Rivers program has achieved 212 GL of water savings to return to the Snowy River overall.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWS includes broad outcomes that are not clearly linked to or measurable against actions. The RRHS identifies river health objectives, risk-based management actions and resource condition targets. Objectives and actions of the BEs reflect their specific purpose. GCSs and surface water LMPs include a broad high-level objective. There are no explicit performance indicators to determine achievement of these outcomes.
5. Does the plan facilitate trade?	To some extent	Trading is facilitated through legislation, planning instruments, Ministerial orders and statutory plans. The SWS describes the trading framework and BEs and licences are able to be traded. The WA 1989 prohibits permanent trade in the WSPAs without an approved plan. In unregulated systems transfers are generally limited to downstream, or to winter fill. In unregulated and groundwater systems entitlements remain bundled.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWS identifies plantations, domestic and stock use and land use change as significant intercepting activities in the region and proposes declared intensive management areas to manage some new forestry activities. The facility to do this is in the Water Bill Exposure Draft. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Use of groundwater in the catchment is minimal at present. The SWS considers connectivity of surface water and groundwater systems and states that Ministerial guidelines to consider GDE risks in licensing decisions will be prepared (currently in development). GDEs were mapped in the 2012 Gippsland groundwater atlas project. GCSs describe connectivity but do not have rules designed to protect GDEs or target water management towards rivers and GDEs where value and risk are high.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The SWS outlines options to increase and protect the environment's share of water, which have largely been delivered. The evidence for a trade-off process for these actions is difficult to find. BEs contain passing-flow requirements, although it is not clear that these have an environmental basis. Environmental water is provided to the Snowy River through an EE. The CMA identified environmental priorities for the region as part of its draft waterway management strategy development.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The RRHS sets condition targets with associated monitoring and reporting. Targets in the RRHS were reviewed and partly revised to create catchment goals in the Improving East Gippsland Rivers plan. Waterway condition is assessed through the ISC, IWC and the pilot IEC. GCSs and LMPs are to be reviewed every five years. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs and licences. Southern Rural Water produces local water reports for the region. While resource monitoring (water levels, flows, extraction volumes) is extensively reported on the DEPI website, alignment of monitoring results with the often general objectives of planning instruments can be difficult to assess.

Report card criteria	Assessment	Commentary
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWSs provide long-term climate change scenarios and potential threats to water availability and set out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations and qualification of rights). Flexibility for water entitlement holders through trade is designed to help with adapting to change, and environmental water management through the RRHS aims to build resilience in ecosystems to cope with extreme events.
11. Is stakeholder engagement in the planning process adequate?	Yes	Formal stakeholder engagement occurred during development of the SWS, RRHS, RCS and draft waterway strategy. The CMA undertook a review of the previous RCS that included a survey of community members about the previous strategy and perceptions of implementation and effectiveness. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Current monitoring and reporting is largely about achievement of actions, allocation levels, and flows or water levels rather than environmental or socio-economic outcomes. Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Annual reports by the CMA and water corporations and the Victorian Water Accounts provide information relating to objectives of the RRHS and BEs. The VEW reports on the use and short-term effect of its delivered environmental water. A review of the RRHS found that a clear program logic linking the vision, regional priorities and targets at different scales was needed. It also concluded that some catchment goals had been achieved (e.g. EWR establishment) but others were no longer appropriate.

GLENELG HOPKINS CATCHMENT



Context

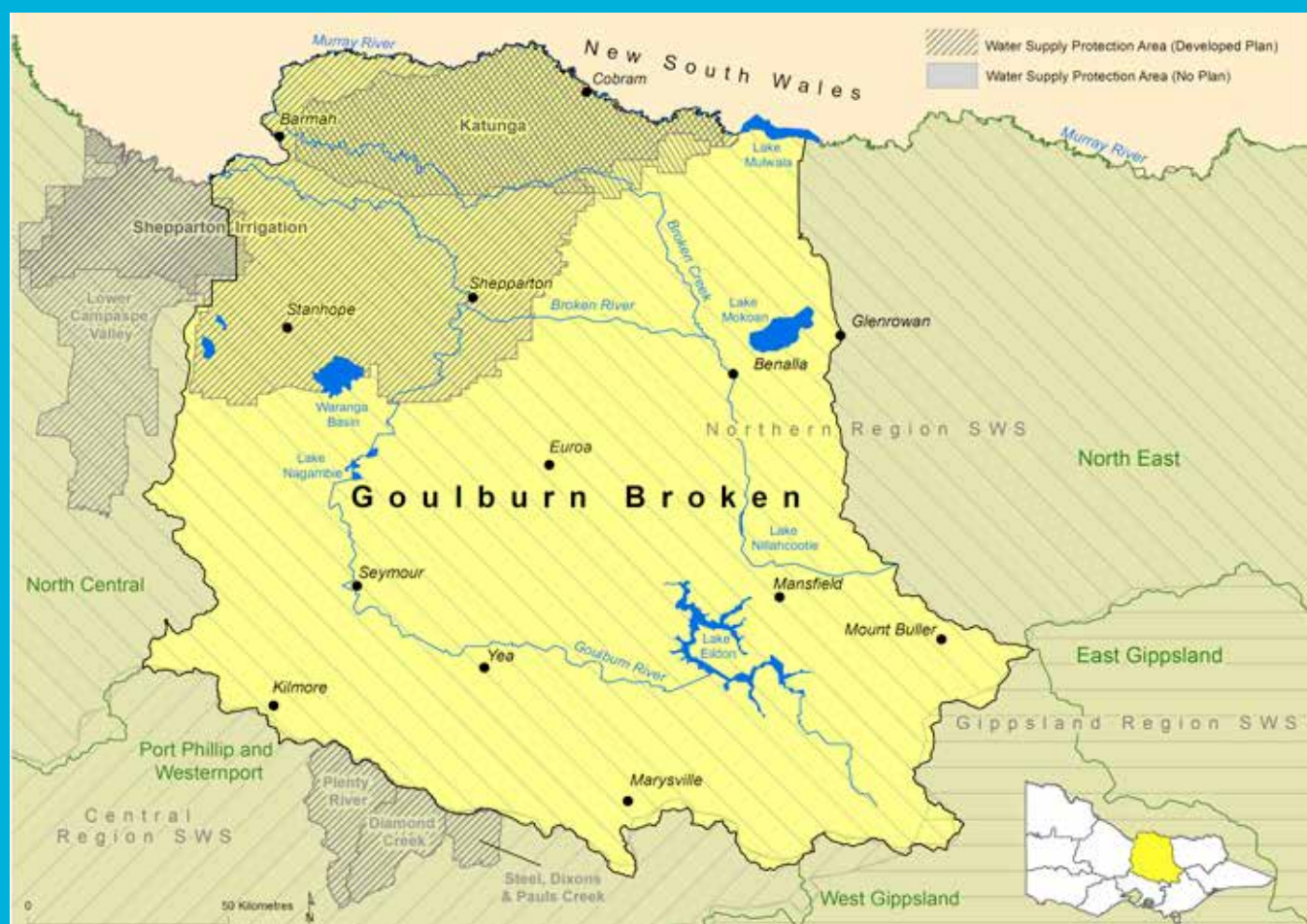
The Glenelg Hopkins catchment is located in Victoria's south-west and includes the subcatchments of Glenelg, Hopkins, Portland Coast and a small part of the Millicent Coastal Basin. Along the coastal fringe the main agricultural activities are dairy farming and plantations. Rocklands Reservoir is on the Upper Glenelg, which diverts flow to the Wimmera Mallee water supply system, and there are few other major surface water storages. The Glenelg subcatchment ISC rating improved from very poor to poor in the last assessment. Threats to water resources in the catchment include modified flow regimes, land use change, farm dam interception, climate change and water quality. Groundwater is an important source of domestic and stock water and is used to augment urban areas. Responsibilities for water planning and implementation are split between DEPI, Southern Rural Water Corporation, Grampians Wimmera Mallee Water, Central Highlands Water, Wannon Water and the Glenelg Hopkins CMA. Agreements exist between the Victorian and South Australian governments for management of the border region groundwater resource.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The catchment is in the Western Region SWS. Other relevant planning instruments include the Glenelg Hopkins RRHS, the 2013 Glenelg Hopkins RCS, LMPs for the Portland and Glenelg basins, 11 BEs and one EE. There are four WSPAs, two with the required statutory management plan (Yangery and Nullawarre). Management rules for groundwater are collated within three GCSs. The Glenelg Hopkins RRHS is soon to be succeeded by the Corangamite RWS (not yet drafted).
2. Does the plan include key assessments?	Yes	The SWS contains key hydrological, socio-economic and environmental assessments. The RRHS determined regional priorities through assessments of ecological, social and economic criteria to identify values and threats to those values. The RCS was informed by the ISC. The CMA completed a flow-stress study for the upper Glenelg catchment. Southern Rural Water has produced groundwater atlases for the region. GCSs used assessments from the Victorian groundwater management framework.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	Although no areas of overuse were identified in the planning instruments, monitoring shows a long-term decline in the Condah aquifer. Condah and Glenelg WSPAs have no statutory management plan despite being identified as fully allocated and being declared before 2004. The Yangery GMP shows overuse – which is managed through a ban on new licences. Most areas have entitlement caps through PCVs, SDLs or limits in BEs. The trade-off process to set levels of extraction in planning instruments is not generally transparent.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWS includes broad outcomes that are not clearly linked to or measurable against actions. The RRHS identifies river health objectives, risk-based management actions and resource condition targets. GCSs and surface water LMPs include a broad high-level objective. There are no explicit performance indicators to determine achievement of these outcomes. The RCS sets environmental and public benefit objectives and targets for water quality, water use efficiency and river health in the region.
5. Does the plan facilitate trade?	To some extent	Trading is facilitated through legislation, planning instruments, Ministerial orders and statutory plans. The SWS describes the trading framework and proposes actions to facilitate trade. Outside WSPAs there are no system-specific trading rules for groundwater. Trade is restricted in the WSPAs with management plans to maintain extraction under the PCV. In unregulated systems generally transfers are limited to downstream, or to winter fill. Interstate trade of groundwater is covered by the SA-Victoria border agreement. In unregulated and groundwater systems entitlements remain bundled. WA 1989 prohibits permanent trade in the WSPAs without an approved plan.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWS identifies stock and domestic use and land use change through forestry as significant intercepting activities and proposes the use of declared intensive management areas for new forestry activity. The facility to do this is in the Water Bill Exposure Draft. GMPs quantified stock and domestic and dairy wash estimates, but did not explain the risk of these intercepting activities. The GCSs do not identify risks from interception. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Some instruments include actions to identify areas of connectivity but these do not appear to be managed. Resource appraisals, where undertaken, identify areas of groundwater/surface water interaction, but overall coordination, prioritisation and progress is unclear. The Western Region SWS discusses connectivity with respect to GDEs in a general sense and recommends more detail within LMPs, but this is not evident in the GCSs.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The SWS identifies potential savings and infrastructure to increase the available environmental water for the Glenelg River. Environmental water is provided through an EE managed by VEW in accordance with annual plans developed jointly with the CMA. Although river LMPs include cease-to-pumps, it is not clear whether these are based on environmental requirements or are solely to provide for stock and domestic needs. Environmental provisions in the GMPs are unclear.

Report card criteria	Assessment	Commentary
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The RRHS sets condition targets with associated monitoring and reporting. Waterway condition is assessed through the ISC, IWC and the pilot IEC. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs and licences. GCSs and LMPs are to be reviewed every five years. GMP monitoring determines compliance with water level and quality objectives. Data within DEPI's monthly water reports and annual Victorian Water Accounts reports allow evaluation of compliance. While resource monitoring (water levels, flows, extraction volumes) is extensively reported on the DEPI website, alignment of monitoring results with the often general objectives of planning instruments is difficult to assess.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWS provides long-term climate change scenarios and potential threats and sets out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations, qualification of rights). Flexibility for water entitlement holders through trade is designed to help with adapting to change, and environmental water management aims to build resilience in ecosystems to cope with extreme events. The RCS acknowledges the area is highly susceptible to climate change impacts. GMPs estimate recharge as a proportion of long-term rainfall, capturing some aspects of climate variability. The Wimmera and Glenelg rivers BE requires a review within three years which must take into account all data and information on the impacts of climate change. It is unclear if this was carried out.
11. Is stakeholder engagement in the planning process adequate?	Yes	Significant stakeholder engagement was undertaken in the development of the SWS, RCS and RRHS. The CMA's review of the previous RCS included a survey, workshops and fora for community input. During development of the RRHS, community surveys were undertaken to establish social values and a citizen jury was used in the pre-planning phase. GMPs were drafted by a consultative committee. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Groundwater monitoring for WSPAs in the region shows insufficient data to determine long-term trends for Yangery and Nullawarre, while Condah is declining and Glenelg is stable over the long term. A review of the RRHS noted many of the planned actions had been completed but that policies had changed significantly since its development and revisions were required. The VEWHS reports on the use and short-term effect of its delivered environmental water.

GOULBURN BROKEN CATCHMENT



Context

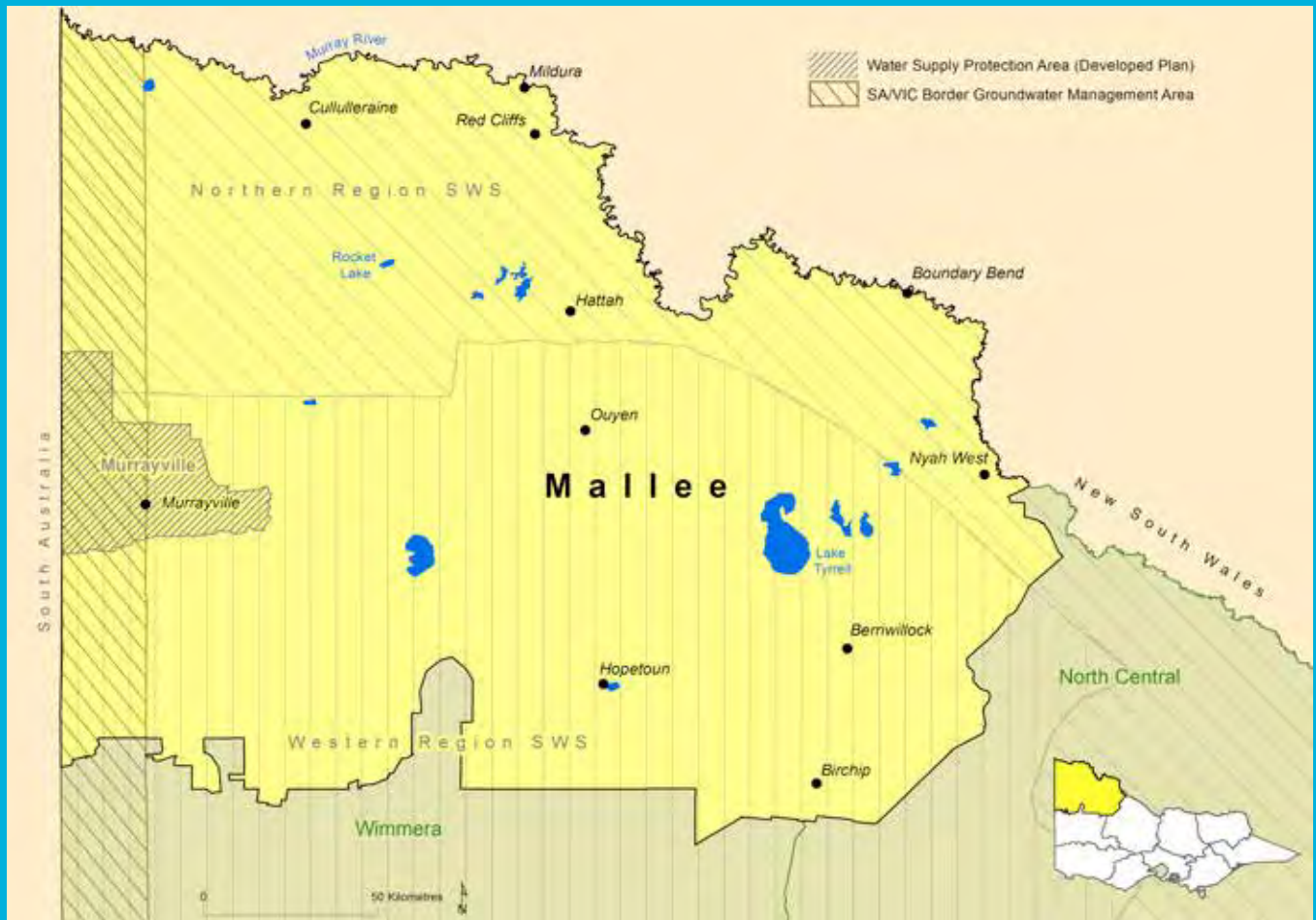
The Goulburn Broken catchment is located in northern Victoria and is the largest Victorian tributary to the Murray River, contributing 11 per cent of the inflows to the MDB. The catchment is highly developed, regulated and fully allocated under the MDB cap. Major water uses in the catchment include irrigated and dryland agriculture, domestic and stock use and town supply. The level of surface water use is high at up to 50 per cent of natural flow. Key pressures on water resources include climate change and variability, water regulation and extraction, and interception activities. The catchment's waterways were rated as being in poor ecological condition in the most recent ISC assessment. Responsibilities for water planning and implementation are split between DEPI, Goulburn Valley Water Corporation, North East Water Corporation, Goulburn-Murray Water and the Goulburn Broken CMA.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The catchment is in the Northern Region SWS. Other relevant planning instruments include the Goulburn Broken RRHS, 2013 Goulburn Broken RCS, statutory GMP for Katunga, non-statutory LMPs for Strathbogie and Upper Goulburn GMAs and 33 BEs, including four EEs. The Goulburn Broken RRHS is soon to be succeeded by the Goulburn Broken Waterway Strategy (GBWS) (currently in draft). The Shepparton Irrigation Region WSPA has been abolished and the statutory plan revoked, to be replaced with a LMP. Two water source (river) BEs include rules for allocating water and managing dam releases. Local management rules have been published for all unregulated river catchments.
2. Does the plan include key assessments?	Yes	The SWS was based on extensive hydrological, environmental and socio-economic assessments. The RRHS includes a detailed assessment of environmental, economic and social values and risks for river assets. The RCS draws on the ISC and RRHS assessments to identify priorities for rivers. The draft GBWS uses an updated river condition and risk assessment that includes information from the recent ISC and IWC. Groundwater LMPs are based on groundwater resource appraisals.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	River systems in the catchment are fully allocated under the MDB cap and nearly all GMAs have a PCV which limits the issue of entitlement. These were set at either current entitlement levels or in some cases allow for issue of some further entitlement. The mechanism to determine additional amounts is unclear. Katunga GMP and the water source BEs include seasonal allocation rules. The SWS recommends water recovery targets for the Goulburn and Broken regulated rivers. While considerable recovery has been achieved, it is unclear to what extent.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWS has broad outcomes that are not clearly linked to or measurable against actions. The RRHS identifies river health objectives, risk-based management actions and resource condition targets. The Katunga GMP objective includes ensuring the long-term sustainability of the resources. There are no explicit performance indicators to determine achievement of these broad outcomes. The draft GBWS has a structured hierarchy of outcomes and outlines a proposed monitoring scheme based on these.
5. Does the plan facilitate trade?	To some extent	Trade is well established in the regulated rivers and irrigation districts and facilitated through legislation, planning instruments, Ministerial orders and statutory plans. Within these systems there are zone constraints on trade based on hydrological limits and permanent trade out of irrigation districts remains limited to four per cent per year until July 2014. There is also a limit on net interstate trade. In unregulated systems transfers are generally limited to downstream with a 20 per cent reduction, or to winter fill. In unregulated and groundwater systems entitlements remain bundled.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWS proposes improved monitoring and the development of reasonable use guidelines for stock and domestic use, which are addressed in the Water Bill Exposure Draft. Other intercepting activities are assessed as low risk except in local areas. Forestry activities in the catchment are not quantified or addressed in other planning instruments. GMPs and LMPs estimate stock and domestic water use but do not manage it. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The SWS states that there are no strongly connected areas in the catchment. In the context of salinity control, connectivity is identified in the previous Shepparton Irrigation Region GMP between the shallow aquifer and surface water. The Strathbogie and Upper Goulburn LMPs recognise the connection between groundwater and river baseflows, and maintaining these flows into rivers is a major factor in setting PCVs and water-level-based restrictions.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Water source BEs contain environmental flow provisions relating to dam operations and optimising regulated river flow patterns. While RRHS risk assessments identify river reaches where flow is a significant threat, there is no evidence of planning to address some of these. The VEWB manages several environmental water entitlements in accordance with annual plans developed jointly with the CMA. The draft GBWS includes targets for the management and use of held environmental water.

Report card criteria	Assessment	Commentary
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The RRHS sets condition targets with associated monitoring and reporting and a review of the strategy was done as part of developing the draft GBWS. Waterway condition is assessed through the ISC and IWC. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs and licences. Monitoring for statutory management plans determines compliance with water level and quality objectives. While resource monitoring (water levels, flows, extraction volumes) is reported on the DEPI website, alignment of monitoring results with the often general objectives of planning instruments can be difficult to assess.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWS provides long-term climate change scenarios and potential threats to water availability. It sets out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations, qualification of rights). Flexibility for water entitlement holders through trade is designed to help with adapting to change, and environmental water management aims to build resilience in ecosystems to cope with extreme events.
11. Is stakeholder engagement in the planning process adequate?	Yes	Formal stakeholder engagement occurred during development of the SWS and RRHS and is underway for the draft GBWS. Substantial engagement was used to develop GMPs and LMPs although it is not well documented. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Current monitoring and reporting is largely about achievement of actions, allocation levels, and flows or water levels rather than environmental or socio-economic outcomes. Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Achievement of some outcomes related to GMPs and BEs has been reported in water corporation annual reports. Annual reports by the CMA and water corporations and the Victorian Water Accounts provide information relating to objectives of the RRHS and BEs. The VEW reports on the use and short-term effect of its delivered environmental water.

MALLEE CATCHMENT



Context

Located in north-west Victoria, the Mallee catchment is bounded by the South Australian border to the west and the Murray River to the north. Rivers and waterways include the Murray River, significant parts of its anabranches and floodplain, and sections of Yarriambiack, Outlet, Tyrrell and Lalbert creeks. The catchment has more than 900 wetlands, several of which are recognised as internationally significant, and two Living Murray icon sites. The last ISC assessment rated the catchment as very poor. The region is an important area for dryland agricultural production and irrigated horticulture along the Murray River. Threats to water resources include rising watertables causing salinity impacts, population growth and climate change. A significant proportion of the catchment is public land including the major reserves of Hattah-Kulkyne, Murray-Sunset and Wyperfeld national parks. Responsibilities for water planning and implementation are split between DEPI, Grampians Wimmera Mallee Water, Lower Murray Water, and the Mallee CMA. Agreements exist between the Victorian and South Australian governments for the border groundwater resource and the MDBA for the icon sites.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The catchment is in the Northern Region SWS and Western Region SWS areas. Other relevant planning instruments include the Mallee RRHS, 2013 Mallee RCS and Murrayville GMP. The only BE within the catchment is the EE for the Murray River. The Mallee RRHS is soon to be succeeded by the Mallee Waterway Strategy (MWS) (currently in draft).
2. Does the plan include key assessments?	To some extent	The SWSs were based on extensive hydrological, environmental and socio-economic assessments, although those relating to the Mallee catchment are limited and contain only general information. The RRHS was informed by an assessment of environmental, social and economic risks and values. A hydrological model informed the Murrayville GMP with some evidence of consideration of socio-economic values. The RCS used assessments including expert workshops and community feedback.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	River systems in the catchment are fully allocated under the MDB cap. The most recent ISC shows the catchment as being in poor to very poor condition. The SWSs do not identify new water recovery for the Murray, as this occurs through the inter-jurisdictional Living Murray Initiative. Water recovery has also been achieved through the Wimmera Mallee pipeline project. The GMP established an extraction limit in line with the SA-Victoria border agreement. The Northern Region SWS states that water recovery targets will be determined for high-value wetland systems as part of the development of the MWS, but this cannot be seen in the draft MWS, which states that it will implement water recovery identified in the SWS. The trade-off process to set levels of extraction in planning instruments for the Mallee is not generally transparent.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWSs include broad outcomes that are not clearly linked to or measurable against actions. The GMP contains high-level objectives but does not have explicit performance indicators to determine achievement. The RRHS identifies river health objectives, risk-based management actions and resource condition targets.
5. Does the plan facilitate trade?	To some extent	The SWS describes the trading framework and proposes actions to facilitate trade. Trade is well established and facilitated through legislation, planning instruments, Ministerial orders and statutory plans. There are zone constraints on trade based on hydrological limits and permanent trade out of irrigation districts remains limited to four per cent per year until July 2014. Interstate trade of groundwater is covered by the SA-Victoria border agreement. Trade is facilitated under the GMP with restrictions to minimise third-party impacts and maintain the extraction limit. Limits on trade in the Murrayville WPSA are based on hydrological constraints. In unregulated systems generally transfers are limited to downstream with a 20 per cent reduction, or to winter fill. In unregulated and groundwater systems entitlements remain bundled.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The Northern Region SWS proposes improved monitoring and the development of reasonable use guidelines for stock and domestic use, and the Western Region SWS proposes the use of declared intensive management areas for new forestry activity. These proposals are addressed in the Water Bill Exposure Draft. The GMP identifies domestic and stock take as an intercepting activity but notes that actual use is not clear. No other potential intercepting activities have been identified in the area. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The SWSs identify integrated management of connected systems as a priority, although no specific actions are identified for the Mallee catchment. The Western SWS states that a risk-based approach will be used for management but this is not yet evident in instruments. Areas of connectivity are identified in the RRHS due to the salinity threat from rising watertables. The GMP manages groundwater resources as the aquifer is confined and recharge is negligible. While considered, there is no evidence of the identified GDE management.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The principles for environmental water recovery are discussed in the SWSs, but no specific provisions are made for the Mallee catchment. The VEWH manages the EE in accordance with annual plans developed jointly with the CMA. The GMP does not identify environmental water. Environmental objectives for the Living Murray wetland icon site are established by the MDBA. Environmental priorities are set through the RRHS for complementary works. As part of the Wimmera Mallee pipeline project, a series of priority wetlands were connected to the pipeline to allow for environmental water delivery, although there is little information on the wetlands' requirements.

Report card criteria	Assessment	Commentary
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Waterway condition is assessed through the ISC and IWC. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs and licences. The SA-Victoria border agreement stipulates the groundwater monitoring framework. Monitoring for statutory management plans determine compliance with water level and quality objectives. While resource monitoring (water levels, flows, extraction volumes) is reported on the DEPI website, alignment of monitoring results with the often general objectives of planning instruments can be difficult to assess.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWSs provide long-term climate change scenarios and potential threats to water availability. They set out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. Climate change and variability were not considered applicable in development of the GMP. Climate variability is considered in the BE as the Valley cap is climatically adjusted. Flexibility for water entitlement holders through trade is designed to help them adapt to change, and environmental water management aims to build resilience in ecosystems to cope with extreme events. Climate change is noted as a significant risk in the draft MWS, which contains an action to improve knowledge.
11. Is stakeholder engagement in the planning process adequate?	Yes	Formal stakeholder engagement occurred during development of the SWSs, RRHS, RCS and draft MWS. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available. The GMP underwent stakeholder engagement during drafting and all public submissions were responded to.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Achievement of some outcomes related to GMPs and BEs has been reported in water corporation annual reports. Annual reports by the CMA and water corporations and the Victorian Water Accounts provide information relating to objectives of the RRHS and BEs. The VEWH reports on the use and short-term effect of its delivered environmental water.

NORTH CENTRAL CATCHMENT



Context

The North Central catchment is located in northern Victoria within the MDB. The major systems in the catchment are the Loddon, Campaspe and Avoca rivers and agriculture is the dominant land use. The Campaspe system is highly developed and regulated and supported by extensive irrigation infrastructure. There has been significant investment in water efficiency projects in the catchment. Water is diverted through channels to the Loddon from other systems for irrigation purposes. Groundwater use is high in the Loddon Highlands and Lower Campaspe Valley and long-term aquifer levels are declining. Key drivers behind water planning in the catchment include potential impacts from climate change, changes in land use through subdivision of land and growth in urban centres such as Bendigo. According to the last ISC report, the catchment's waterways are in very poor ecological condition. Responsibilities for water planning and implementation are split between DEPI, Coliban Water Corporation, Goulburn-Murray Water and the North Central CMA.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The catchment is in the Northern Region SWS and Western Region SWS areas. Other relevant planning instruments include the North Central RRHS, 2013 North Central RCS, Loddon Highlands and Lower Campaspe Valley statutory GMPs, non-statutory LMPs for the Central Victoria Mineral Springs and Mid Loddon GMAs. Three water source (river) BEs include rules for allocating water and managing dam releases. There are three EEs. Local management rules have been published for all unregulated river catchments. The North Central RRHS is soon to be succeeded by the North Central Waterway Strategy (NCWS) (not yet drafted). The Shepparton Irrigation Region GMP overlaps with the catchment.
2. Does the plan include key assessments?	Yes	The SWSs were based on extensive hydrological, environmental and socio-economic assessments. The RRHS includes a detailed assessment of environmental, economic and social values and risks for river assets. The RCS draws on the ISC and RRHS assessments to identify priorities for rivers. The GMPs are based on recent resource assessments considering water balance, connection to surface water, GDEs and risks.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	River systems in the catchment are fully allocated under the MDB cap. Most areas have entitlement caps through PCVs or limits in BEs. The Northern Region SWS defines environmental water requirements for major rivers, with targets for water recovery and an indicative timetable. The Western Region SWS does not propose any water recovery for its rivers in this catchment. GMPs and LMPs refer to PCVs which limit entitlement to current levels, except for one zone in the Central Victorian Mineral Springs GMA. The trade-off process to set levels of extraction in planning instruments is not generally transparent.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWSs include broad outcomes that are not clearly linked to or measurable against actions. The RRHS identifies river health objectives, risk-based management actions and resource condition targets. The LMPs and GMPs contain high-level objectives. There are no explicit performance indicators to determine achievement of these broad outcomes.
5. Does the plan facilitate trade?	To some extent	Trade is well established in the regulated rivers and irrigation districts and facilitated through legislation, planning instruments, Ministerial orders and statutory plans. Within these systems there are zone constraints on trade based on hydrological limits and permanent trade out of irrigation districts remains limited to four per cent per year until July 2014. There is also a limit on net interstate trade. In unregulated systems transfers are generally limited to downstream with a 20 per cent reduction, or to winter fill. In unregulated and groundwater systems entitlements remain bundled. GMPs and groundwater LMPs include zone trading constraints.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWSs recognise stock and domestic use as a relevant intercepting activity and quantify interception by farm dams, land use change and bushfires. The Northern Region SWS proposes improved monitoring and the development of reasonable use guidelines for stock and domestic use. The Western Region SWS proposes the use of declared intensive management areas for new forestry activity. These proposals are addressed in the Water Bill Exposure Draft. Other intercepting activities are assessed as low risk except in local areas. GMPs and LMPs estimate stock and domestic water use but do not manage it. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/address surface water and groundwater connectivity as appropriate?	Yes	The Northern Region SWS notes no strongly connected areas in the catchment, and the Western SWS proposes further work to identify connections. The groundwater plans recognise the connection between groundwater and river baseflows, and maintaining these flows into rivers is a major factor in setting PCVs and water-level-based restrictions. Statutory and non-statutory groundwater plans include water-level-triggered restrictions on pumping to manage risks to connected rivers and GDEs.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	While considerable water recovery has occurred it is not clear if the SWSs' targets have been met. River BEs have environmental flow provisions relating to dam operations and optimising regulated river flow patterns. The VEWH manages several environmental water entitlements in accordance with annual plans developed jointly with the CMA. The recent groundwater plans include actions to protect GDEs. While the RRHS risk assessments identify river reaches where flow is a significant threat, there is no evidence of planning to address some of these.

Report card criteria	Assessment	Commentary
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Waterway condition is assessed through the ISC and IWC. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs and licences. Monitoring for statutory management plans determine compliance with water level and quality objectives. While resource monitoring (water levels, flows, extraction volumes) is reported on the DEPI website, alignment of monitoring results with often general objectives of planning instruments can be difficult to assess.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWSs provide long-term climate change scenarios and potential threats to water availability to 2055. They set out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations, qualification of rights). Flexibility for water entitlement holders through trade is designed to help them adapt to change, and environmental water management through the RRHS aims to build resilience in ecosystems to cope with extreme events.
11. Is stakeholder engagement in the planning process adequate?	Yes	Formal stakeholder engagement occurred during development of the SWSs and RRHS and is underway for the NCWS. Substantial engagement has occurred in developing GMPs and LMPs although it is not well documented. This included use of consultative committees, public meetings and public submissions with published responses. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Current monitoring and reporting is largely about achievement of actions, allocation levels, and flows or water levels rather than environmental or socio-economic outcomes. Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Achievement of some outcomes related to GMPs and BEs has been reported in water corporation annual reports. Annual reports by the CMA and water corporations and the Victorian Water Accounts provide information relating to objectives of the RRHS and BEs. The VEW reports on the use and short-term effect of its delivered environmental water.

NORTH EAST CATCHMENT



Context

The North East catchment is located in the Upper Murray region of northern Victoria. The catchment includes three major basins: Upper Murray, Kiewa and Ovens. The Ovens River is characterised by its high level of surface water and groundwater connectivity. The catchment contains two per cent of the MDB surface area but contributes 38 per cent of its inflows. Two major storages, Lake Hume and Lake Dartmouth, are located in the catchment and supply bulk water for irrigation, domestic and stock use and urban consumption in the surrounding region. Major water uses in the catchment include irrigated and dryland agriculture, plantation forestry, hydro-electricity and town supply. The primary drivers behind planning in the area are the effects of drought on the surface water and groundwater resources and the potential impacts from future climate change. High degrees of connectivity have driven the planning of water resources in the Upper Ovens catchment, the first example of an integrated water management plan in Victoria. The catchment's waterways are in better ecological condition than other Murray catchments in northern Victoria. Responsibilities for water planning and implementation are split between DEPI, North East Water Corporation, Goulburn-Murray Water and the North East CMA.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The catchment is in the Northern Region SWS. Other relevant planning instruments include the North East RRHS, 2013 North East RCS, Upper Ovens statutory Water Management Plan (WMP) and a LMP for the lower Ovens GMA. The North East RRHS is soon to be succeeded by the North East Waterway Strategy (NEWS) (not yet drafted). Four water source (river) BEs include rules for allocating water and managing dam releases. Local management rules have been published for all unregulated river catchments.
2. Does the plan include key assessments?	Yes	The SWS was based on extensive hydrological, environmental and socio-economic assessments. The RRHS includes a detailed assessment of environmental, economic and social values and risks for river assets. The RCS draws on the ISC and RRHS assessments to identify priorities for rivers. The WMP and LMP were developed using resource assessments considering water balance, connection to surface water, and water resource behaviour. Detailed assessments and modelling were done for the interconnected surface and groundwater systems in the Upper Ovens and these are available online.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	River systems in the catchment are fully allocated under the MDB cap. The SWS recommends water recovery targets for the regulated rivers, but no further recovery is listed as being needed for rivers in the North East. The Lower Ovens PCV and LMP allow some increase in entitlement in some zones. Local management rules and the WMP contain low-flow restriction rules. Mechanisms are in place to restrict use in dry periods. The trade-off process to set levels of extraction in planning instruments is described in the Upper Ovens WMP, but is not generally transparent in other instruments.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWS has broad outcomes that are not clearly linked to or measurable against actions. The RRHS identifies river health objectives, risk-based management actions and resource condition targets. The WMP and LMP contain high-level objectives but have no explicit performance indicators to determine achievement of the broad outcomes identified, although the WMP does include a protected minimum flow in the river for the environment.
5. Does the plan facilitate trade?	Yes	Trade is established and facilitated through legislation, planning instruments, Ministerial orders and statutory plans. The SWS describes the trading framework and proposes actions to facilitate trade. Rules limit trade between zones and catchments based on hydrologic limitations. The Upper Ovens WMP is unique in providing for trade between surface water and groundwater. In unregulated systems transfers are generally limited to downstream with a 20 per cent reduction, or to winter fill. In unregulated and groundwater systems entitlements remain bundled.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWS recognises stock and domestic use as a relevant intercepting activity and proposes improved monitoring and the development of reasonable use guidelines. This is addressed in the Water Bill Exposure Draft. Other intercepting activities are assessed as low risk except in local areas. Forestry plantations are identified as an activity in the Upper Ovens subcatchment, but these are not managed through the WMP. The WMP and LMP recognise stock and domestic water use but do not manage it. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The Upper Ovens system is the only highly connected system identified in the SWS. Areas of connectivity are described and arrangements identified for a shared water regime between surface water and groundwater users, based on thorough investigation and modelling. The LMP indicates that the need to support river low flows and other GDEs is a key factor in setting extraction limits.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The SWS outlines water recovery targets and specifies potential initiatives to recover water, although there are no specific water recovery targets for North East river systems and no EEs in the catchment. BEs contain environmental flow provisions relating to dam operations and optimising regulated river flow patterns. The WMP and LMP include actions to protect river flows.

Report card criteria	Assessment	Commentary
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The RRHS sets condition targets with associated monitoring and waterway condition is assessed through the ISC and IWC. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs and licences. Monitoring for statutory management plans determines compliance with water level and quality objectives. While resource monitoring (water levels, flows, extraction volumes) is reported on the DEPI website, alignment of monitoring results with the often general objectives of planning instruments can be difficult to assess.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWS provides long-term climate change scenarios and potential threats to water availability to 2055. It sets out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations, qualification of rights). Flexibility for water entitlement holders through trade is designed to help them adapt to change, and environmental water management aims to build resilience in ecosystems to cope with extreme events. The LMP indicates that the need to support river low flows and other GDEs is a key factor in setting extraction limits.
11. Is stakeholder engagement in the planning process adequate?	Yes	Formal stakeholder engagement occurred during development of the SWS and RRHS and is underway for the NEWS. Substantial engagement occurred in developing the GMP and LMP. This included use of consultative committees, public meetings and public submissions with published responses. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Current monitoring and reporting is largely about achievement of actions, allocation levels, and flows or water levels rather than environmental or socio-economic outcomes. Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Annual reports by the CMA and water corporations and the Victorian Water Accounts provide information relating to objectives of the RRHS and BEs. Achievement of some outcomes related to GMPs and BEs has been reported in water corporation annual reports. Annual reports are published for the WMP and LMP.

PORT PHILLIP AND WESTERNPORT CATCHMENT



Context

The Port Phillip and Westernport catchment is located in south-central Victoria and includes the urban centre of Melbourne. Major pressures on water resources include climate change and variability and urban expansion. A key focus of water planning in this catchment is securing Melbourne's urban water supply with consideration of the recent drought and continuing peri-urban expansion. This catchment is the most complex in terms of active water planning in Victoria, with 11 declared WSPAs and 48 BEs held between various water corporations including Melbourne Water – which also functions as the CMA. Subcatchments are the Werribee, Maribyrnong, Yarra, Dandenong and Westernport. The Yarra subcatchment is the only area in Victoria with implemented streamflow management plans. Responsibilities for water planning and implementation are split between DEPI, Melbourne Water, the Port Phillip and Westernport CMA and to some extent Westernport Water, Western Water and the Southern Rural Water Corporation.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The catchment is in the Central Region SWS, although this is to be superseded by the Living Melbourne, Living Victoria initiative. The new Melbourne Water Healthy Waterways Strategy (MWHWS) has replaced the Port Phillip and Westernport RRHS. The updated Port Phillip and Westernport RCS is in draft awaiting government approval. There is one statutory GMP and eight statutory SFMPs. Two WSPAs remain without statutory plans. Three water source (river) BEs and one EE include infrastructure passing-flow rules. Management rules for groundwater are collated with groundwater catchment statements (GCSs) and local management rules for unregulated river catchments have been published.
2. Does the plan include key assessments?	Yes	The SWS was based on extensive hydrological, environmental and socio-economic assessments. The MWHWS assesses values and risks to rivers, wetlands and estuaries. The RCS draws on ISC and MWHWS assessments to identify priorities for rivers. SFMPs were based on hydrological models and assessments of land use and environmental water requirements, and the GMP used hydrogeological modelling and assessment. The Yarra EE is supported by environmental flow studies.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The Central Region SWS defines environmental water requirements for major rivers, with targets and a timetable for water recovery. Where requirements will not be met, the trade-offs are explained. The SWS also identifies WSPA-declared systems in the catchment as overused. SFMPs in the Yarra subcatchment attempt to address overuse through a range of measures including restriction management. Deutgam WSPA was identified as potentially overused but no statutory management plan is in place. A cap was applied and a LMP prepared which includes trigger levels for restriction or undertaking a technical review. The Stream Flow Tender process in three SFMPs provided some recovery in unregulated river systems. The trade-off process to set levels of extraction in planning instruments is not generally transparent.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWS has broad outcomes that are not clearly linked to or measurable against actions. SFMPs contain reach-specific environmental objectives. GCSs and the GMP have high-level objectives but no explicit performance indicators to determine achievement of the broad outcomes. The MWHWS includes a hierarchy of outcomes and measurable targets relating to environmental and non-consumptive benefits together with associated management actions and monitoring arrangements.
5. Does the plan facilitate trade?	To some extent	Trade is established and facilitated through legislation, planning instruments, Ministerial orders and statutory plans. Most areas have entitlement caps through PCVs or limits in BEs. Localised trade restrictions are outlined in SFMPs to maintain the extraction limit. Within the Werribee District there are zone constraints on trade based on hydrologic limitations. In unregulated systems transfers are generally limited to downstream with a 20 per cent reduction, or to winter fill. In unregulated and groundwater systems entitlements remain bundled.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWS identifies and quantifies interception by farm dams, land use change and bushfires. Farm dam impacts were considered in SFMPs and rules were included to limit growth. Other interception activities were not addressed. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The SWS mentions connectivity in general terms. Surface water and groundwater resources are not managed in an integrated way through plans. Connectivity is not accounted for in SFMPs or the MWHWS, even though there are connected systems.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Environmental water is provided through the Yarra EE. Minimum passing flows are stipulated in the Maribyrnong and Werribee BEs. Low flows are protected through restrictions both within WSPAs through statutory plans and administratively as per local management rules. Within SFMP areas flow levels are informed by specific studies of environmental requirements, while outside WSPAs they are based on generic principles. The SWS identifies environmental water required by the larger systems, but the full provision of this water has not yet occurred through the amendment of BEs.

Report card criteria	Assessment	Commentary
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Waterway condition is assessed through the ISC, IWC and pilot IEC. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs and licences. Monitoring for statutory management plans determines water level and quality objective compliance. GCSs and LMPs are to be reviewed every five years. The MWHWS includes a monitoring program for higher-level condition outcomes and activity targets. Reporting is proposed to be annual. While resource monitoring (water levels, flows, extraction volumes) is reported on the DEPI website, alignment of monitoring results with the often general objectives of planning instruments can be difficult to assess.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWS provides long-term climate change scenarios and potential threats to water availability to 2055. Seasonal variability is considered in SFMPs. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations, qualification of rights). Flexibility for water entitlement holders through trade is designed to help them adapt to change, and environmental water management aims to build resilience in ecosystems to cope with extreme events.
11. Is stakeholder engagement in the planning process adequate?	Yes	Formal stakeholder engagement occurred during development of the SWS and MWHWS. The SFMPs and GMP were drafted by consultative committees and public submissions were responded to and made publicly available during plan development. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Current monitoring and reporting is largely about achievement of actions, allocation levels, and flows or water levels rather than environmental or socio-economic outcomes. Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Annual reports for the GMP and SFMPs are published, covering progress in plan implementation, water use and monitoring of water levels, flows and where relevant salinity. It is not clear how the reported information demonstrates progress towards broader plan outcomes. Several of these plans were reviewed during the past few years based on further investigations and modelling, but only one recommended the plan be amended (Olinda Creek SFMP). The VEWHS reports on the use and short-term effect of its delivered environmental water.

WEST GIPPSLAND CATCHMENT



Context

The West Gippsland catchment is located in south-eastern Victoria. Its major rivers are the Thomson, Macalister, Latrobe and Avon, which drain to the Ramsar-listed Gippsland Lakes. The regulated Thomson, Macalister and Latrobe rivers are identified as stressed systems and considered to be fully allocated. Major pressures on water resources include climate change and variability, large industry and population growth. Industries in the region include brown coal in the Latrobe Valley, the Macalister Irrigation District and offshore oil and gas extraction. Rivers in the Gippsland region are generally in better condition than elsewhere in Victoria. Groundwater resources in some areas show long-term decline. Responsibilities for water planning and implementation are split between DEPI, Southern Rural Water Corporation, Gippsland Water, South Gippsland Water and the West Gippsland CMA.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The catchment is in the Gippsland Region SWS. Other relevant planning instruments include the West Gippsland RRHS, 2013 West Gippsland RCS and 34 BEs, including four EEs. The West Gippsland RRHS is soon to be succeeded by the West Gippsland Regional Waterway Strategy (WGRWS) (not yet drafted). Management rules for groundwater are collated within GCSs. The Latrobe, South Gippsland, Thompson, Warrion and Yarram basins have surface water LMPs. Three BEs are held by power companies or mining corporations. Yarram WSPA has a GMP. The Sale WSPA does not have the required statutory management plan.
2. Does the plan include key assessments?	Yes	The SWS contains key hydrological, environmental, and socio-economic assessments. The RRHS includes a detailed assessment of environmental, economic and social values and risks to river assets. The development of the RCS included risk assessments for identified priority assets.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	There are no areas of overuse identified for surface water systems. The Thomson, Macalister and Latrobe rivers are considered fully or close to fully allocated. The SWS has actions to deliver permanent allocation to the environment on the Latrobe and Thomson rivers. Caps in the form of SDLs and PCVs are used to limit extraction. LMPs provide triggers for restrictions, although the basis is not specified. Declines in groundwater levels in several WSPAs are not addressed by planning instruments. The SWS proposes precautionary caps on unregulated rivers in the south and east to prevent future overuse although the basis for caps is not stated.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWSs contain broad outcomes that are not clearly linked to or measurable against actions. The RRHS identifies river health objectives, risk-based management actions and resource condition targets. Objectives and actions of the BEs reflect their specific purpose. GCSs, surface water LMPs and the GMPs include a broad high-level objective. There are no explicit performance indicators to determine achievement of these outcomes.
5. Does the plan facilitate trade?	To some extent	Trading is facilitated through legislation, planning instruments, Ministerial orders and statutory plans. The SWS describes the trading framework and BEs and licences are able to be traded. The Act prohibits permanent trade in the WSPAs without an approved plan. In unregulated systems transfers are generally limited to downstream, or to winter fill. In unregulated and groundwater systems entitlements remain bundled. Trade mostly occurs in the more developed parts of the catchment, such as in the Macalister Irrigation District and Latrobe system.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWS identifies plantations, domestic and stock use and land use change as significant intercepting activities and proposes the use of declared intensive management areas for new forestry activity. Several systems in the region are considered fully allocated, but introducing volumetric licences for stock and domestic use is not considered. Plantation forestry is mentioned in the RRHS but no arrangements are specified or impacts quantified. The Yarram GMP acknowledges the impact from offshore oil and gas extractions but does not include measures to address the activity because it is under Commonwealth management. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The SWS considers connectivity of surface water and groundwater systems, identifies highly connected areas and proposes integrated management plans for some areas. The SWS states that Ministerial guidelines to consider GDE risks in licensing decisions will be prepared. GCSs describe connectivity of the resources but do not have rules designed to protect GDEs. The RRHS refers to the vertical link between groundwater and rivers but actions do not reflect a consideration of connectivity. No management of GDEs can be discerned in planning instruments.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The SWS outlines proposals and options to increase and protect the environment's share of water. The evidence base or trade-off process for these actions is difficult to find. BEs contain passing-flow requirements, although it is not clear that these have an environmental basis. The VEW manages several environmental water entitlements in accordance with annual plans developed jointly with the CMA.

Report card criteria	Assessment	Commentary
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The RRHS sets condition targets with associated monitoring and reporting. The 2005 RRHS will be reviewed as part of the development of the regional waterway strategy. GCSs and LMPs are to be reviewed every five years. Waterway condition is assessed through the ISC, IWC and the pilot IEC. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs, licences and GMPs. Southern Rural Water produces local water reports for the region. While resource monitoring (water levels, flows, extraction volumes) is extensively reported on the DEPI website, alignment of monitoring results with the often general objectives of planning instruments can be difficult to assess.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWS provides long-term climate change scenarios and potential threats to water availability and sets out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations, qualification of rights). Flexibility for water entitlement holders through trade is designed to help them adapt to change, and environmental water management aims to build resilience in ecosystems to cope with extreme events. The potential impacts of climate variability were considered during the RCS development process.
11. Is stakeholder engagement in the planning process adequate?	Yes	Significant stakeholder engagement was undertaken during development of the SWS, RCS and RRHS. This included the release of draft documents, discussion papers, public meetings and consultation committees with community and sectoral representatives. Substantial engagement occurred in developing GMPs and LMPs. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Current monitoring and reporting is largely about achievement of actions, allocation levels, and flows or water levels rather than environmental or socio-economic outcomes. Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Annual reports by the CMA and water corporations and the Victorian Water Accounts provide information relating to objectives of the RRHS and BEs. The VEWHS reports on the use and short-term effect of its delivered environmental water.

WIMMERA CATCHMENT



Context

The Wimmera catchment is located in Victoria's north-west and includes the Wimmera River and part of the Millicent Coast Basin to the South Australian border. The river flows to a series of terminal lakes, including two of the largest lakes in Victoria – Lake Hindmarsh and the Ramsar-listed Lake Albury – which are frequently dry due to changes in land and water use and drought. Rainfall is low and evaporation is typically high, resulting in little to no reliable surface water flows and varied groundwater quality and recharge. Surface water is predominantly used for urban and rural stock and domestic purposes and groundwater along the South Australian border for irrigation. Responsibilities for water planning and implementation are split between DEPI, Grampians Wimmera Mallee Water and the Wimmera CMA and agreements exist between the Victorian and South Australian governments for the border groundwater resource.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The catchment is in the Western Region SWS. Other relevant planning instruments include the Wimmera Waterway Health Strategy (WHS), 2013 Wimmera RCS, 11 BEs and one EE, shared between the Wimmera-Glenelg rivers. The Wimmera WHS is soon to be succeeded by the Wimmera Waterway Strategy (WWS) (currently in draft). The West Wimmera Groundwater Management Strategy (GMS) covers the management of four former groundwater WSPAs in the region.
2. Does the plan include key assessments?	To some extent	The SWS is based on extensive hydrological, environmental and socio-economic assessments. Environmental assessments in the Wimmera WHS lack detail. The GMS contains key assessments but levels of connectivity are not well defined. Annual watering plans for EEs reference environmental water requirement studies. The RCS included social analysis. Geomorphic assessments were carried out in the preparation of the CMA's waterway action plans developed for priority waterways.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The GMS states that while most of the area is showing stable groundwater trends some parts are exhibiting declining levels. The GMS does not identify a sustainable level of extraction. While PCVs are proposed there is no formal risk assessment. The SWS allows for groundwater decline to occur where agreed management plans are in place but this trade-off process is not evident. The Our Water Our Future Action Plan identified the Wimmera as an overallocated system for which the initial EWR may be insufficient to prevent further degradation. This was addressed through the Wimmera Mallee Pipeline Project that resulted in water savings to create an environmental entitlement for the Wimmera and Glenelg rivers. All WSPAs in the area have been abolished.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The SWS includes broad outcomes that are not clearly linked to or measurable against actions. The GMS has high-level objectives but not explicit performance indicators to determine achievement. The RRHS does not identify site-specific outcomes. Outcomes for the EE are included in the EOS and reviewed in annual watering plans.
5. Does the plan facilitate trade?	Yes	The SWS describes the trading framework and proposes actions to facilitate trade. Trade is well established and facilitated through legislation, planning instruments, Ministerial orders and statutory plans. Barriers to trade are implemented to maintain extraction under the SDL cap, which results in only localised trade opportunities. Interstate trade of groundwater is covered by the SA-Victoria border agreement. Within the GMS, trade is restricted to within the same aquifer and cannot occur between zones.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The SWS and GMS quantify stock and domestic use, identified as the prime cause of flow stress for the upper Wimmera River in dry periods. A LMP to set a cap on current use is proposed, although this has not been carried out. No risk assessment of intercepting activities is evident in the SWS. Thresholds for interception management are not currently identified in instruments.
7. Does the plan include/address surface water and groundwater connectivity as appropriate?	To some extent	The SWS identifies integrated management of connected systems as a priority and states that a risk-based approach will be used, but this is not evident in instruments. There are no identified integrated surface water and groundwater management provisions in the catchment. The GMS acknowledges the impact of the connected systems on each other and aims for integrated management of the groundwater systems.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The SWS identifies potential savings and infrastructure to increase the EWR. The VEWH manages the EE in accordance with annual plans developed jointly with the CMA. The consumptive BE includes provisions for wetland and recreational water. Provision of environmental water to GDEs through the GMS is not evident. As part of the Wimmera Mallee pipeline project, a series of priority wetlands were connected to the pipeline to allow for environmental water delivery, although it is noted that there is little information on the wetlands' requirements.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Waterway condition is assessed through the ISC and IWC. Monitoring and compliance with passing-flow obligations and PCVs are reported for BEs and licences. The SA-Victoria border agreement stipulates the groundwater monitoring framework. The VEWH reports on the use and short-term effect of its delivered environmental water. Monitoring and compliance with the GMS is not clear.

Report card criteria	Assessment	Commentary
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The SWS provides long-term climate change scenarios and potential threats to water availability. It sets out a seasonally adaptive framework to adjust environmental watering decisions and CMA annual work programs according to prevailing climate conditions. The GMS considers the potential impacts of groundwater use and climate change and variability on the resource. Mechanisms exist to deal with water shortages in the short term (e.g. seasonal allocations, qualification of rights). Flexibility for water entitlement holders through trade is designed to help them adapt to change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Formal stakeholder engagement occurred during development of the SWS and RCS and is underway for the WWS. The GMS was drafted by a consultative committee. The engagement process undertaken during development of the RRHS has not been documented. Legislation outlines requirements for stakeholder engagement in BEs, although evidence of how this was done is not publicly available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Current monitoring and reporting is largely about achievement of actions, allocation levels, and flows or water levels rather than environmental or socio-economic outcomes. Progress has been made on SWS actions but reports are not comprehensive and outcomes are not clear. Annual reports by the CMA and water corporations and the Victorian Water Accounts provide information relating to objectives of the RRHS and BEs. The VEWB reports on the use and short-term effect of its delivered environmental water.

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The context of water planning in Queensland

Water planning in Queensland manages the allocation and use of water across the state's diverse water systems. It aims for the efficient and transparent allocation of water to meet community needs and to provide for economic development in a manner that protects natural ecosystems and other resources from degradation. Queensland accounts for about 20 per cent of Australia's water use. Almost two-thirds of water consumption in Queensland is sourced from surface water. The state's surface water resources range from highly developed systems, such as those in the state's south-east and the upper reaches of the Murray–Darling Basin (MDB) to systems with lower levels of development or in a near-natural state, such as those in Cape York. Groundwater resources range from localised aquifers to the Great Artesian Basin, which underlies about 70 per cent of Queensland.

Queensland faces numerous water planning challenges to ensure water is used efficiently and competing needs for water are balanced in an open and transparent way. Rapid population growth, particularly in the south-east, is increasing demand for urban water supplies. Highly variable rainfall across most of the state has an impact on water availability, which will intensify according to current climate change projections. Providing water for Indigenous economic and social benefit, as well as for cultural flows, provides another driver for water planning. Renewed interest in the development of the state's north, along with coal seam gas exploration and extraction, create additional challenges for the sustainability of water resources.

Planning arrangements

Key legislation and policies

The Queensland *Water Act 2000* (WA 2000) provides the legislative and institutional framework for the allocation and management of Queensland's water resources. Under the WA 2000, all rights to use water are vested in the state. The WA 2000 specifies the circumstances under which a water entitlement is required for the taking of water and provides for the creation of Water Resource Plans (WRPs) and Resource Operations Plans (ROPs) to allocate and manage water at a catchment scale. Wild River Declarations (WRD) also provide for the allocation and management of water in some areas, although these are likely to be replaced by alternative strategies in the near future.

Under the WA 2000 the take of surface water from a watercourse, lake or spring requires a water entitlement – except for stock and domestic purposes and low-risk activities that are prescribed in the Water Regulation 2002. The take of groundwater or overland flow may require an entitlement if the relevant WRP, WRD, moratorium or (for groundwater only) the Water Regulation 2002 states that one is required.

Water Resource Plans and Resource Operations Plans

WRPs are subordinate legislation under the WA 2000, prepared by the Minister for Natural Resources and Mines. They are usually prepared at the catchment level, although some plans include multiple catchments, and specify the outcomes and strategies that will be used for each area. WRPs can be amended or renewed at any time if the Minister believes the outcomes are at risk of not being achieved or if new demands for water emerge. As subordinate legislation, WRPs expire after 10 years unless they have been formally extended or their expiry date has been postponed by the Minister. Before they expire, WRPs are reviewed and replaced with a new plan. In cases where particular sensitivities exist, or where there is a need to review the plans earlier, WRPs may contain provisions for a review after a lesser period. ROPs implement WRPs by setting the day-to-day arrangements for water management. ROPs include operating rules for water releases from water infrastructure, water sharing rules, rules for providing environmental flow requirements and water trading rules. The WA 2000 also specifies the process for developing WRPs and ROPs, including requirements to consider future water needs and undertake community consultation.

QLD

Recent changes to legislative arrangements

Several amendments to the WA 2000 have been made recently, with the general intent to streamline processes for developing and finalising WRPs and ROPs. These changes include:

- providing for the concurrent development of WRPs and ROPs to allow the community to comment on strategic and operational matters simultaneously
- removing the requirement for publication of key issues and proposed strategies and the need for public input – before the development of a draft WRP – if the WRP replaces an existing WRP and does not differ significantly from the existing plan or from arrangements applying in other parts of Queensland
- providing for the Minister to extend the life of WRPs from 10 years to up to 20 years, subject to a public submissions' process, where the Minister believes the postponement will not adversely affect entitlement holders or natural ecosystems
- removing the legislative requirement to form a community reference panel as part of the development process for WRPs to tailor consultation processes
- extending the life of water licences from five, 10 or 20 years to expire in 2111 unless otherwise specified in a WRP, ROP or WRD
- extending the plan reporting interval from annual to five-yearly
- exempting certain low-risk activities from requiring a water entitlement to authorise the take of water, with the ability to limit these activities through a WRP if required (low-risk activities include water taken for amenities, washing for processing and packaging produce from a single farming enterprise)
- extending the Water Act's provisions that exempt riparian stock and domestic water use from requiring a water entitlement to also exempt non-riparian stock and domestic water users.

It is expected that there will be further amendments to the WA 2000 through a proposed strategic review which, among other outcomes, aims to accelerate the release of unallocated water reserves and identify ways to further establish open water markets across Queensland.

Murray–Darling Basin Plan

The Murray–Darling Basin Plan was adopted in November 2012 and is relevant to several water resources in Queensland. The Basin plan has reviewed the cap limits and set sustainable diversion limits (SDLs) that reflect extraction levels considered sustainable in the long term for both surface water and groundwater. Most provisions of the Basin plan do not take effect for several years, such as the transition to SDLs in 2019, but some may influence water planning and management in the shorter term. Where these actions are relevant to the 2013 assessments, they have been identified at the individual plan level.

Table 3: Summary of planning instruments in Queensland

Assessment criteria	State	Catchment	Comment
	WA 2000 Wild Rivers Act	WRP ROP WRD EFAP	
1. Status of plan	yes	yes	WRPs are subordinate legislation under the WA 2000. ROPs are statutory instruments under the WA 2000. WRDs are statutory instruments under the Wild Rivers Act.
2. Key assessments	yes	yes	The WA 2000 specifies the requirement for key assessments. The assessments are undertaken at the plan/declaration area level.
3. Overuse status and pathways to sustainable water extraction		yes	Sustainable extraction limits and environmental flow objectives are specified in each WRP. The rules to achieve these objectives are contained in the ROP. WRDs set extraction limits in Wild River areas.
4. Clearly identified & measurable outcomes	yes	yes	The WA 2000 requires each WRP to include outcomes for the sustainable management of water in the plan area. WRPs specify the outcomes for the plan area. The Wild Rivers Act requires each WRD to specify the natural values it is intended to preserve.
5. Facilitation of trade	yes	yes	The WA 2000 allows WRPs to convert identified water entitlements to tradeable water allocations. ROPs implement the conversion of specific entitlements into allocations and provide the trading rules.
6. Integration of water intercepting activities		yes	WRPs specify which activities are to be regulated. ROPs define the operating rules. WRDs do both in Wild River areas.
7. Surface water/groundwater connectivity		yes	WRPs define the water resources to be managed by the plan. ROPs define the operating rules. WRDs do both in Wild River areas.
8. Environmental water management arrangements		yes	Environmental water management requirements are included in WRPs in the form of environmental flow objectives and in some cases the assets to be protected. The rules for meeting these objectives are detailed in ROPs. WRDs protect natural flows in Wild River areas.
9. Monitoring, compliance and enforcement provisions	yes	yes	The WA 2000 requires public reporting of monitoring for WRPs. The Wild Rivers Act requires reporting of monitoring for WRDs. The statewide Environmental Flows Assessment Program (EFAP) provides environmental assessments at a catchment and local level. The WA 2000 provides compliance provisions.
10. Planning for climate change and extremes in inflows or recharge		yes	WRPs contain strategies and ROPs specify the rules to manage variability of rainfall and run-off patterns. Some WRPs consider the effects of climate change.
11. Stakeholder engagement	yes	yes	The WA 2000 specifies requirements for public consultation for WRPs and ROPs. The Wild Rivers Act specifies these requirements for WRDs. The consultations are undertaken at the proposed plan/declaration area level.
12. Extent to which outcomes have been achieved	yes	yes	The WA 2000 specifies the requirement to report against WRP outcomes. WRPs and ROPs include more detailed arrangements for reporting, including a timeframe. The Wild Rivers Act specifies the requirement to report on WRD monitoring.

Key findings

This section provides updated commentary on the previous report card assessment for Queensland (key findings summarised below) and includes information on significant findings for 2013.

Previous findings

- *Water planning is comprehensive, mature and transparent*
- *There are risks to groundwater resources from rights to water for coal seam gas extraction*
- *Limited ongoing reporting against plan outcomes impacts on adaptive management*

2013 findings

Comprehensive, mature and transparent water planning process

Nearly all major water resources in Queensland are covered by a WRP or a Wild River declaration. The progressive inclusion of groundwater management areas in WRPs increases the effectiveness of conjunctive management in delivering water resource outcomes. Water plan development in Queensland is informed by hydrological, economic, social and environmental assessments. Transparency is provided via a thorough community consultation process that invites community input at key stages of the water planning process and provides public feedback on the issues raised. Recent amendments to the WA 2000 aim to streamline the process for developing and finalising WRPs and ROPs, and to allow for the extension of WRPs for up to 10 years beyond their initial 10-year life. The amendments remove the requirement to undertake a new set of key assessments to inform WRP development and allow greater Ministerial discretion in tailoring the community consultation arrangements to suit the planning needs. These new arrangements place greater emphasis on the need for sound monitoring and evaluation processes to ensure planning arrangements remain well informed and supported by community input.

Continued risk to groundwater resources from rights to water for coal seam gas extraction

Tenure holders under the *Petroleum and Gas (Production and Safety) Act 2004* continue to be provided with 'underground water rights' that are not volumetrically controlled and are outside of the WA 2000 and the water planning process. Chapter 3 of the WA 2000 places conditions on these water rights, including the requirement to minimise adverse impacts on the environment and other authorised users, as well as the need to prepare an underground water impact report with predictions of impacts over a threshold level for a three-year period. Make good provisions also may apply where impacts occur.

The Queensland Government maintains there is transparent accounting of groundwater extraction associated with coal seam gas and that requiring water access entitlements for this purpose would not achieve any additional benefits beyond those under the current management framework.

It is the Commission's view that despite the management arrangements developed, significant water use that is undertaken outside the water planning process – and not accounted for within this process – reduces the transparency of water allocation decisions. As evidenced by public debate, the current approach has the potential to undermine confidence in the water planning process as well as reduce the security of existing water entitlements and water for the environment.

Risks to effective and timely reporting against plan outcomes

To date, the preparation of second-generation plans has involved detailed hydrological, socio-economic and environmental assessments to inform the 10-year review of the first-generation arrangements. In addition, newer plans continue to provide better information on the identification of ecological assets and their critical water requirements, although some WRPs and ROPs include less detail on monitoring. Recent changes to the WA 2000 allow for plans to remain in place for up to 20 years, where the Minister is satisfied that by doing so no impact on achieving plan outcomes will occur and entitlement holders and natural ecosystems will not be adversely affected. Public reporting on WRPs occurs through the publication of annual reports and previously has been undertaken against all plan outcomes, although the 2012–13 annual report only reported on implementation activities conducted during the reporting period and on whether the management strategies in the plans had been effective. While it is clear the achievement of some plan outcomes (particularly long-term ecological ones) may require many years of data collection to verify, transparency is promoted by providing regular progress updates on ongoing actions and plan implementation against plan outcomes. Given the resource-constrained environment, recent changes to reporting and plan review intervals, as well as reduced detail on monitoring commitments provided in new ROPs, there is uncertainty in relation to the ability of future evaluations to measure progress towards plan outcomes and support adaptive management.

Findings against 12 criteria

1. Status of water planning	At present 23 WRPs and 22 ROPs are in place. A further WRP may be developed in the future to cover water sharing arrangements on Cape York Peninsula. Four second-generation WRPs are either in place or in the process of being prepared or implemented. Several plans have been extended beyond their original expiry date while replacement plans are prepared. Several groundwater resources remain to be included in WRPs. Other resources without plans are limited in extent and consist mostly of small coastal catchments with little consumptive use.
2. Do plans include key assessments?	A comprehensive set of key assessments is available to support WRP and ROP development, including second-generation plans. Newer plans continue to provide better information on the identification of ecological assets and their critical water requirements.
3. Do plans prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Queensland has not identified overuse of any surface water resources, but it intends to reduce allocations in a small number of plan areas, particularly in the MDB. Sustainable extraction limits and environmental flow objectives have been set for each plan area. The basis for the setting of environmental flows and the environmental assets they are designed to protect is not explained in the plans, but is outlined to varying degrees of detail in supporting documents. Overuse has been identified for some groundwater systems. In these cases a pathway to return the resource to a sustainable level of extraction within a defined time has been identified, although full implementation of these pathways has not occurred to date.
4. Do plans include clearly identified and measurable outcomes?	WRPs generally contain clearly specified outcomes, with newer plans including greater clarity around environmental outcomes and identification of environmental assets. Indigenous cultural assets have also been identified in some plans. While performance indicators are included in many plans, they form part of the plan specification rather than a means of measuring progress towards achieving plan outcomes. As a result, there are no interim measures to enable assessment and reporting of progress towards outcome achievement.
5. Do plans facilitate trade?	Trade has been facilitated in all major supplemented water supply schemes and for most unsupplemented surface water entitlements by volume. The creation of fully tradeable groundwater allocations has lagged behind that for surface water and is being introduced on a priority basis.
6. Is interception appropriately considered and integrated into plans?	Interception has been integrated into WRPs where it has been identified as a risk to the resource. In some cases the WRPs commit to ongoing monitoring and reporting of interception risks, but in many WRP areas there is a lack of publicly available information to indicate that comprehensive risk assessments have been undertaken. WRPs regulate the interception of overland flows in areas where this has been identified as a risk to the water resource – with storages generally greater than a threshold volume requiring a water licence and a development permit for the construction of the works. Estimates of water consumed for stock and domestic purposes are also considered in water allocation decisions. Water for mining operations generally requires a licence, however water to support coal seam gas operations is licensed under the Gas and Petroleum Act, rather than the WA 2000. This has the potential to undermine confidence in the water planning process and reduce the security of existing water entitlements and water for the environment.
7. Do plans include/ address GW/SW connectivity as appropriate?	Queensland is progressively including groundwater resources into WRPs and through this process giving consideration to surface water/groundwater connectivity and the development of conjunctive management arrangements. Groundwater contributions to surface water baseflows are often accounted for in plan arrangements. Integrated surface water/groundwater modelling was used for the first time to inform the development of the Water Resource (Wet Tropics) Plan 2013.
8. Do plans contain accountable environmental water management arrangements?	WRPs use a rules-based approach to providing water for the environment through the setting of sustainable extraction limits and environmental flow objectives specified as a proportion of pre-development flows, rather than a volumetric specification of environmental water. In addition, ROPs set requirements through water licensing conditions and water infrastructure operating rules to provide environmental flows and/or releases to support downstream ecological values. Specification of the environmental assets or processes to be protected is increasing with newer plans, but is absent in some older plans.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Monitoring provisions are included in plans with varying levels of detail, with newer plans often containing less detail than older plans. The plan reporting interval has been extended in recent plans from annual to five-yearly. Links to outcomes are either specified or can be inferred. Statewide strategies for environmental monitoring and assessment are being progressively tied to an evaluation of plan outcome achievement at the time of plan review, but limited information is provided throughout the plan's life. Compliance provisions are included in the WA 2000 and WRPs. Queensland reports on compliance and enforcement through the National Framework for Compliance and Enforcement Systems for Water Resource Management. Additionally, some compliance reporting is included in WRP annual reports.

10. Do plans deal appropriately with climate change and extremes in inflows or recharge?	Existing WRPs are based on hydrological modelling using long-term hydrological data, but generally not extremes beyond the historical record. Water plans include arrangements to manage variability of inflows through annual allocation decisions and have critical water sharing arrangements where necessary. Modelled effects of climate change have informed the development of some replacement WRPs.
11. Is stakeholder engagement in the planning process adequate?	Stakeholder consultation processes are outlined in the WA 2000 for WRPs and ROPs. These processes include the identification of stakeholders and steps to involve them at key stages of the planning process. A consultation report, prepared once a WRP or ROP has been finalised, provides public feedback on the issues raised and decisions taken. Recent changes to the WA 2000 have enabled concurrent development of WRPs and ROPs, potentially increasing the effectiveness of the consultation process. Other changes have reduced the level of consultation required through removing the requirement to form Community Reference Panels. In cases where the replacement plan does not differ significantly from the original plan or arrangements applying in other areas of Queensland, replacement of WRPs is streamlined. Public release of a draft replacement plan, followed by a submissions process, is still required in all cases. The Minister retains the discretion to undertake additional consultation if required to inform the planning process.
12. To what extent have identified outcomes been achieved during the reporting period?	Reporting against WRP outcomes occurs to some extent through annual reports. These reports provide a snapshot of the year passed – including flow statistics, water use and trading activity – but include only very limited information against some plan outcomes. Where information has been provided it indicates that progress is being made towards the achievement of plan outcomes in most cases. For some plan areas, an assessment was not possible due to inadequate reporting. Most outcomes were reported as being achieved for the four WRPs where assessments were available as part of the preparation of draft replacement plans.

Glossary and abbreviations

Term	Acronym	Definition
Department of Natural Resources and Mines	DNRM	Queensland Government agency with lead role in water planning.
Environmental Flows Assessment Program	EFAP	Statewide program to identify flow-dependent ecological assets and assess the effectiveness of the WRPs and ROPs in achieving ecological outcomes.
Resource Operations Plans	ROP	Document enabled by the <i>Water Act 2000</i> to provide the operational rules to implement WRPs.
Supplemented		Water supply from releases of water stored in infrastructure. Equivalent to a regulated water supply.
Unsupplemented		Water supply not involving releases of water stored in infrastructure. Equivalent to an unregulated water supply.
Water Resource Plans	WRP	Subordinate legislation under the <i>Water Act 2000</i> which provides the water planning outcomes and strategies for the area covered by the plan, including the quantity of water available for consumptive use.
Wild River area	WRA	An area covered by a Wild River declaration.
Wild River Declaration	WRD	Declaration under the <i>Wild Rivers Act 2005</i> to preserve the natural values of the river system(s) included in the declaration, in part through the specification of the quantity of water available for consumptive use.

Planning areas

Queensland



QLD

1. Water Resource (Baffle Creek) Plan	275	16. Water Resource (Mary Basin) Plan	306
2. Water Resource (Barron) Plan	277	17. Water Resource (Mitchell) Plan	308
3. Water Resource (Border Rivers) Plan	279	18. Water Resource (Moonie River) Plan	310
4. Water Resource (Boyne River Basin) Plan	281	19. Water Resource (Moreton) Plan	312
5. Water Resource (Burdekin Basin) Plan	283	20. Water Resource (Pioneer Valley) Plan	314
6. Water Resource (Burnett Basin) Plan	285	21. Water Resource (Warrego, Paroo, Bulloo and Nebine) Plan	316
7. Water Resource (Calliope River Basin) Plan	287	22. Water Resource (Wet Tropics) Plan	318
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15. Water Resource (Logan Basin) Plan	304		

BAFFLE CREEK BASIN WATER RESOURCE PLAN 2010



Context

The Baffle Creek Basin is located on the central Queensland coast, with waters discharging into the Coral Sea north of Bundaberg. The plan area is one of the few remaining unregulated catchments in the region, and has extensive protected areas and nationally important wetlands. Mean annual rainfall is about 1000 mm, with most falling between December and March.

The area has experienced significant population growth in recent years, particularly in the coastal resort towns of Agnes Water and Seventeen Seventy. It has a comparatively narrow economic base, with about two-thirds of registered businesses belonging to the agricultural and fisheries sector. The main commercial water resource consumption is for irrigated fodder production, horticultural enterprises and sugar cane.

Although there are relatively low levels of water use in the plan area, demand for water resources may increase with the potential expansion of horticulture. The plan was developed to support sustainable growth while protecting water-dependent ecosystems. The plan manages unsupplemented surface water extractions and take of overland flow.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2010 and the ROP in 2011.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the plan. Risks to key environmental assets were clearly documented and assessed, but other risks were not explicitly identified or assessed. There was no modelling of groundwater and surface water interactions but the plan stated that groundwater availability and extraction in the area was minimal.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It establishes an extraction limit and includes pass-flow conditions on water licences to protect low flows. The trade-off decisions are explicit.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly identified outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	No	The plan does not enable trade. The current level of entitlement is low in most catchments and the WRP specifies unallocated water reserves to meet future demands. The plan also requires all licences to include volumetric limits. The reliance on unallocated water to meet future demand is not consistent with the NWI outcomes of promoting water use efficiency or facilitating water going to the highest-value use.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception of overland flow is integrated into the plan. It is unclear whether other forms of interception have been considered, especially stock and domestic use, despite the plan identifying population growth in the area.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan does not address groundwater and surface water connectivity, although it stated that groundwater availability and extraction in the area was not considered to be significant.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has specific environmental objectives and accountable environmental watering arrangements such as pass-flow conditions on water licences.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The WRP and the ROP specify the monitoring arrangements. Reporting of hydrological monitoring began with the 2011–12 WRP annual report. Ecological monitoring has previously been undertaken through EFAP. Due to other priorities, ecological monitoring was suspended in 2011–12 and there is no indication of when it will resume. The WA 2000 contains compliance and enforcement mechanisms.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions but does contain strategies such as flow conditions on licences to protect the low-flow regime. The Central Queensland Regional Water Supply Strategy considers the impacts of longer-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	Engagement included consideration of stakeholder and public input during development of the WRP and ROP. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Reporting against plan outcomes occurs through WRP annual reports. The 2012–13 WRP annual report indicated progress was being made towards achieving ecological and economic outcomes. The report did not provide information on progress towards social or cultural outcomes.

BARRON WATER RESOURCE PLAN 2002



Context

The Barron WRP is centred on the Atherton Tableland in Far North Queensland. It includes the catchment of the Barron River, which flows into the Coral Sea near Cairns, and the upper reaches of the Walsh River, which flows west and joins the Mitchell River flowing into the Gulf of Carpentaria. The WRP also includes the groundwater resources of the Atherton Subartesian Area and the Cairns Northern Beaches Subartesian Area. Rainfall is predominantly seasonal with about 80 per cent of rainfall falling between December and March.

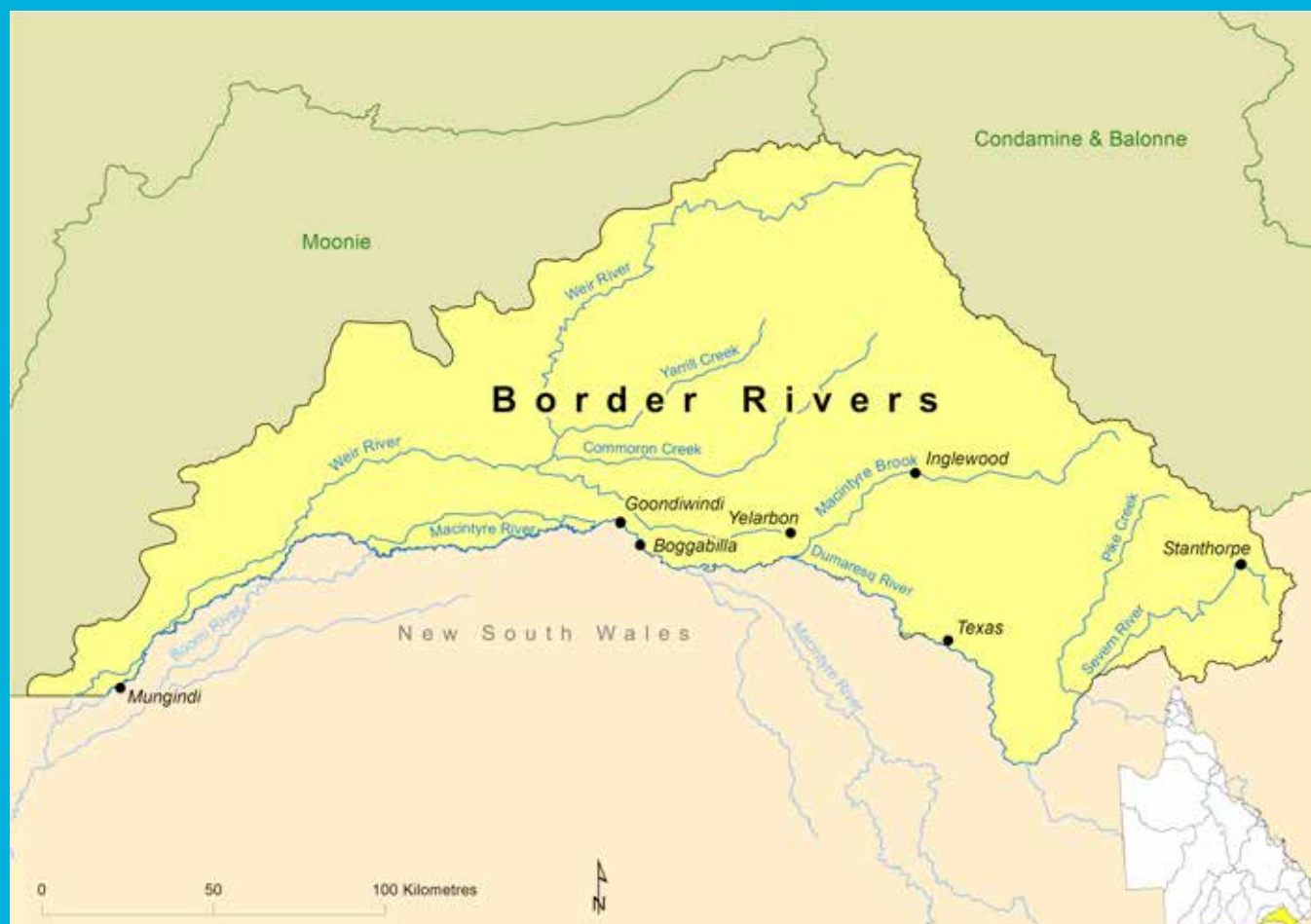
The Mareeba Dimbulah Water Supply Scheme supplied from Tinaroo Falls Dam is the major water resource development in the plan area and involves interbasin transfers between the Barron and Walsh rivers. Other important storages in the plan area are the Copperlode Dam and the Kuranda Weir.

Consumptive water use is dominated by irrigated agriculture, urban supply for Cairns and hydro-electricity generation. Water for a growing urban population in Cairns, as well as recognition of the need to maintain river health, are the major water planning challenges.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2002 and the ROP in 2005. The WRP was amended in 2009 to extend the conversion of area-based to volumetric licences and tradeable allocations. Amendments to the ROP to accommodate the amended WRP were finalised in 2011 and additional minor amendments were completed in 2013. The WRP has been extended and is now due to expire on 31 August 2014. A review is underway.
2. Does the plan include key assessments?	Yes	The key assessments undertaken to support plan development were comprehensive. The outcomes of the key assessments and consultations are explicitly linked to the plan's objectives.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan does establish an extraction limit. Rules to protect low flows, waterholes and lakes have also been included to prevent seasonal stress and areas of high cultural and ecological value. Clear trade-offs have been made in fully allocated areas to ensure the pre-plan resource and ecosystem condition is maintained. Closer monitoring is proposed for highly developed areas.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly identified outcomes and strategies intended to achieve these outcomes. Risk assessments have been undertaken to guide strategies. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	To some extent	The original Barron WRP established trading for supplemented resources and the amended plan extends trading to some but not all unsupplemented resources. Arrangements are now in place for trading of unsupplemented surface water and groundwater in the Atherton Subartesian Area.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Overland flow was considered to be a low risk and so not requiring management. No other interception activities were identified. No demand assessment was found for stock and domestic take of groundwater.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan does not explicitly identify areas of connectivity, but it does place restrictions on surface water and groundwater extractions in the Atherton Subartesian Area to manage possible impacts on groundwater and surface water flows respectively. A review is focusing on areas of connectivity on the Atherton Tableland.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental flow objectives and other strategies, including water release rules for Tinaroo Falls Dam, to protect minimum flows during the dry season.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through WRP and EFAP annual reports (e.g. flow, trade, compliance, water use and ecological), but results are not always reported against plan outcomes. It is unclear whether monitoring will enable an assessment of progress against all of the plan's ecological outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements. The Far North Queensland Regional Water Supply Strategy considers the impacts of longer-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development and amendment of the WRP involved extensive engagement with a wide cross-section of the community at key stages of plan development and amendment. This process included the formation and active involvement of an Indigenous working group. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report. The 2012–13 WRP annual report noted that key stakeholders were being consulted to inform the WRP 10-year review.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Annual reporting indicates progress is being made against most outcomes but suggests there is insufficient evidence to comment on several ecological outcomes. A targeted assessment and review of the WRP is underway that may provide a more complete assessment against plan outcomes.

BORDER RIVERS WATER RESOURCE PLAN 2003



Context

The Border Rivers catchment is situated in southern Queensland and northern New South Wales and lies within the northern Murray–Darling Basin. Its main watercourses – the Dumaresq, Macintyre and Barwon rivers – form part of the state border between Queensland and NSW. The area is covered by an intergovernmental agreement between the NSW and Queensland governments as well as the Murray–Darling Basin cap on extractions.

The plan manages the Queensland portion of the Border Rivers catchment. It includes management of supplemented supply, unsupplemented supply and overland-flow harvesting. Water infrastructure in the plan area is dominated by private infrastructure to support opportunity-based water harvesting entitlements and also includes the Macintyre Brook and Border Rivers water supply schemes.

The region supports a wide variety of irrigated and dryland agricultural industries, such as intensive fruit and vegetable production, broadacre cropping and cotton. The lagoon wetland systems in the Boggabilla area are of special significance to local Indigenous communities.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2003 and the ROP in 2008. The WRP was amended in 2007 to support interstate trading with NSW and has been extended to remain in force until June 2019 unless replaced earlier. The Border Rivers intergovernmental agreement with NSW was most recently amended in 2008.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support plan development, although environmental assets were not explicitly identified and there was no evidence of an assessment and mitigation of risks.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. The plan establishes an extraction limit, but there is no clear identification of environmental assets or trade-off decisions.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly identified outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade and explains the reasons behind barriers to trade in the plan; for example, the trading zones and volumetric limits are to ensure that environmental and third-party impacts of trade are minimised and that the plan's outcomes are met.
6. Is interception appropriately considered and integrated into the plan?	Yes	The take of overland flow is regulated and managed under an authorisation in accordance with the requirements of the plan. Other forms of interception were not identified to be significant in this catchment.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan recognises connectivity between groundwater and surface water. Although groundwater extractions at the time of the plan's development were not a significant risk to achieving its outcomes, an amendment to the plan is being drafted to incorporate the management of all groundwater within the plan area.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has broad environmental objectives and accountable environmental watering arrangements, but specific environmental assets and their water needs have not been clearly identified. Water has been gifted to the Commonwealth Environmental Water Holder.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through a range of programs including the Sustainable Rivers Audit (SRA) and WRP and EFAP annual reports (e.g. flow, trade, water use and ecological). The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	Engagement included consideration of stakeholder and public input during plan development. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP 2011–12 annual report indicates that progress is being made against all outcomes. It states that a more complete assessment of environmental outcomes will be undertaken as part of the plan's review, which is now scheduled to be undertaken before 2019 to align with the Murray–Darling Basin Plan.

BOYNE RIVER BASIN WATER RESOURCE PLAN 2013



Context

The Boyne River flows into Port Curtis south of Gladstone and is connected to the sea by an extensive estuary. Rainfall in the catchment is predominantly seasonal with about 60 per cent of rainfall falling between December and March.

Awoonga Dam is the major storage on the Boyne River and is used to supply water to Gladstone for urban and industrial uses. The Boyne WRP manages both supplemented and unsupplemented water. The WRP aims to ensure a secure water supply for Gladstone and the Gladstone State Development Area, one of the most important industrial development areas in Australia.

Consumptive water use is dominated by urban and industrial water for Gladstone, supplied from the Awoonga Dam. Water is also used for small-scale irrigation both above and below Awoonga Dam.

The first WRP was implemented in this area in 2000. Queensland undertook a 10-year review of the plan and released a replacement plan in December 2013. This assessment is based on the replacement plan unless specific reference is made to the original plan.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP has been in place since December 2000 and the ROP since May 2003. A replacement WRP and ROP amendment were finalised concurrently in December 2013.
2. Does the plan include key assessments?	Yes	All key assessments were undertaken during preparation of the replacement WRP, including a review of the original plan's effectiveness in meeting its objectives. Risks resulting from the take of overland flow and groundwater were considered to be low.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The new plan does not identify any areas of overuse. It aims to prevent overuse through capping extractions, regulating extractions based on the volume of water held in the Awoonga Dam and more closely mimicking pre-development flow patterns below Awoonga Dam.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The WRP has clearly specified outcomes and performance indicators in relation to water security and environmental flows. The ROP outlines the monitoring that operators of Awoonga Dam are required to undertake, however there is a lack of detail as to how this monitoring will be conducted.
5. Does the plan facilitate trade?	To some extent	There is limited demand for trading because most water in the catchment is used for urban and industrial use sourced from Awoonga Dam. The plan includes a small number of unsupplemented licences both upstream and downstream of the dam. The WRP facilitates seasonal trading of these entitlements.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan does not identify any significant interception activities. An assessment of overland flow has been undertaken, indicating a low level of risk to plan outcomes from the level of take. Unlicensed take for low-risk activities is limited to 5 ML to ensure that plan outcomes are not affected.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan relates to surface water only. There is little use of groundwater in the plan area, which mainly consists of accessing alluvial deposits to supplement surface water take.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has accountable environmental watering arrangements that apply when the dam is above 30 m Australian Height Datum. These arrangements have been improved in the replacement plan based on monitoring results.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through WRP and EFAP annual reports. A detailed assessment against the outcomes of the 2000 WRP was undertaken as part of the new plan's preparation. Under the new plan, the reporting schedule has been extended from annually to five-yearly. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data updated to 2011. It does not include modelling of future climatic conditions. The capacity of Awoonga Dam was increased to provide greater security of water supplies for Gladstone, in part to deal with climate variability. The Fitzroy WRP includes a reserve for possible future use by Gladstone. The Central Queensland Regional Water Supply Strategy considers the impacts of longer-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the replacement WRP and ROP amendment involved consultation with key stakeholders in line with the streamlined process available for replacement plans. Community input was invited through the release of an overview report and a public submissions process. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The assessments undertaken to support the replacement WRP indicated the 2000 WRP was successful in meeting its economic and social objectives and partially successful in meeting its environmental objectives. Changes to several environmental objectives have been included in the replacement WRP.

BURDEKIN BASIN

WATER RESOURCE PLAN 2007



Context

The Burdekin Basin is located on the northern Queensland coast, with waters discharging onto the Great Barrier Reef near Ayr. The Burdekin River catchment is the second-largest river basin on the Queensland east coast and delivers a third of the total median annual discharge from all coastal catchments that flow into the Great Barrier Reef lagoon. Mean annual rainfall varies from between 600 to 2500 mm per year, and mostly falls between December and April.

The plan area is highly regulated and includes the Burdekin Haughton and Bowen Broken water supply schemes. Queensland's largest dam, Burdekin Falls Dam, is the major storage in the plan area. The plan manages both supplemented and unsupplemented surface water, as well as overland flow.

The Burdekin Basin's main water uses are for irrigated agriculture and mining. Its water supply schemes provide town supply for the many centres within the catchment, as well as the major cities of Townsville and Thuringowa located outside of the plan area. The expected urban and industrial growth in these cities will be underpinned by water from the basin.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2007 and the ROP in 2009.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the plan. Risks to key environmental assets were documented and assessed. Water for future mining activity has been allowed for. Comprehensive groundwater modelling is planned for inclusion in a future plan amendment to enable protection of the groundwater-dependent ecosystems (GDEs) identified as key environmental assets.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan establishes an extraction limit and rules to ensure environmental flows are maintained. Trade-off decisions are explicit.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly identified outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	Yes	The plan enables trade for all supplemented entitlements and unsupplemented entitlements in most of the high-use areas. Some unsupplemented water licences and water harvesting licences cannot be traded. The plan clearly explains that water trading rules have been developed to protect security of supply as well as ecological outcomes.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan generally requires the take of overland flow over 250 ML to be licensed, and incorporates estimates of stock and domestic extractions and water harvesting into the hydrological model.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The pre-planning ecological assessment identifies GDEs and areas of high connectivity within the plan area. The plan manages one highly connected area as a single surface water resource. Management of groundwater resources in the Lower Burdekin delta, which is artificially recharged, is not included in the WRP due to the lack of detailed hydrological and water use information at the time of plan development.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has broad environmental objectives and accountable environmental watering arrangements. The water needs of the key environmental assets have not been clearly identified, but an environmental sensitivity analysis to regime changes has been undertaken.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through WRP and EFAP annual reports (e.g. flow, water use and ecological), but results are not always reported against plan outcomes. It is unclear whether monitoring will enable an assessment of progress against all of the plan's ecological outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions but does contain strategies to protect low flows. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	Engagement included the consideration of stakeholder and public input during plan development. Public feedback was provided on how submissions were addressed in finalising the plan through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The 2011–12 annual report indicated the WRP had been successful in meeting its economic and social objectives. The report also stated there was insufficient evidence to comment on many of the plan's environmental objectives and that additional analysis was required. Reporting against plan outcomes was not included in the 2012–13 annual report.

BURNETT BASIN WATER RESOURCE PLAN 2013



Context

The rivers and streams in the Burnett Basin flow into the Coral Sea near Bundaberg. The WRP covers the Burnett and several smaller catchments as well as a number of groundwater aquifers. The area lies in between the tropical north and temperate south of the state, which makes rainfall extremely variable.

The streamflows are highly modified by water resource development and the WRP includes five water supply schemes. The primary driver for water planning is to ensure a secure water supply to meet the growing demand for urban, industrial and agricultural uses in the area. Sugar cane is the most significant water user.

The first WRP was implemented in this area in 2000. Queensland undertook a 10-year review of the plan and prepared a draft replacement plan, which has been released for public consultation. This assessment is based on the draft replacement plan unless specific reference is made to the original water resource plan.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP has been in place since December 2000 and the ROP since May 2003. A draft replacement WRP has been released for public consultation. A ROP amendment is also at the consultation draft stage. DNRM has advised that it will be finalised after the new WRP is released in 2014.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the replacement WRP, including a review of the original plan's effectiveness in meeting its objectives. Risks resulting from the take of overland flow and groundwater have been identified.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	Overuse of the Coastal Burnett Groundwater Management Area (GMA) has been identified. A pathway to return the groundwater resource to a sustainable level of extraction through reduced annual announced entitlements is in place. Returning this resource to a sustainable level of use will also be facilitated through its inclusion in the ROP. The plan prevents overuse of other groundwater systems and surface water through the establishment of water extraction limits.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly identified economic, social, cultural and environmental outcomes, along with strategies and performance indicators related to both environmental flows and water security. The plan also includes arrangements for monitoring and reporting.
5. Does the plan facilitate trade?	Yes	The existing WRP and ROP provide for trading for most surface water resources in the management area, including unsupplemented water. Once finalised the ROP amendment will establish tradeable groundwater allocations in the Coastal Burnett GMA.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The replacement WRP will manage the take of overland flow water once a ROP amendment is in place. Plantation forestry is not a risk to the water resource. Mine dewatering requires a water licence.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan manages both surface water and groundwater from several groundwater management areas. The plan establishes rules to ensure both resources are managed sustainably.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has environmental objectives and strategies to achieve these objectives, as well as an extensive set of environmental flow indicators. The ROP contains provisions for licence holders to release water from storages to provide for environmental flows, as well as to monitor and report on release quantities and water quality.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through WRP and EFAP annual reports (e.g. flow, trade, compliance, water use and ecological). A detailed assessment against plan outcomes was undertaken as part of the new plan's preparation. Under the draft replacement plan the reporting schedule has been extended from annually to five-yearly. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan is based on hydrological modelling using historical data but does not include climate projections. The use of data to 2008, rather than including the wetter years since then, improves the chances of meeting or exceeding the plan's environmental flow and water security objectives. The plan deals with extremes in inflows through critical water sharing arrangements, annual allocation decisions and conditions on licences.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the draft WRP has involved extensive consultation with a wide cross-section of the community. The community has been invited to participate in the development of the final replacement plan through the release of an overview report and a public submissions process.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The assessments undertaken to support the replacement WRP indicated that the 2000 WRP was partially successful in meeting its environmental and economic objectives. The plan was successful in meeting its social objectives. Where challenges have been identified, improved arrangements have been included in the draft replacement WRP.

CALLIOPE RIVER BASIN WATER RESOURCE PLAN 2006



Context

The Calliope River flows into the Coral Sea at Gladstone and is connected to the sea by an extensive estuary. The WRP covers the entire river catchment and manages surface water including overland-flow water. The rainfall is predominantly seasonal with about 60 per cent of rainfall falling between December and March.

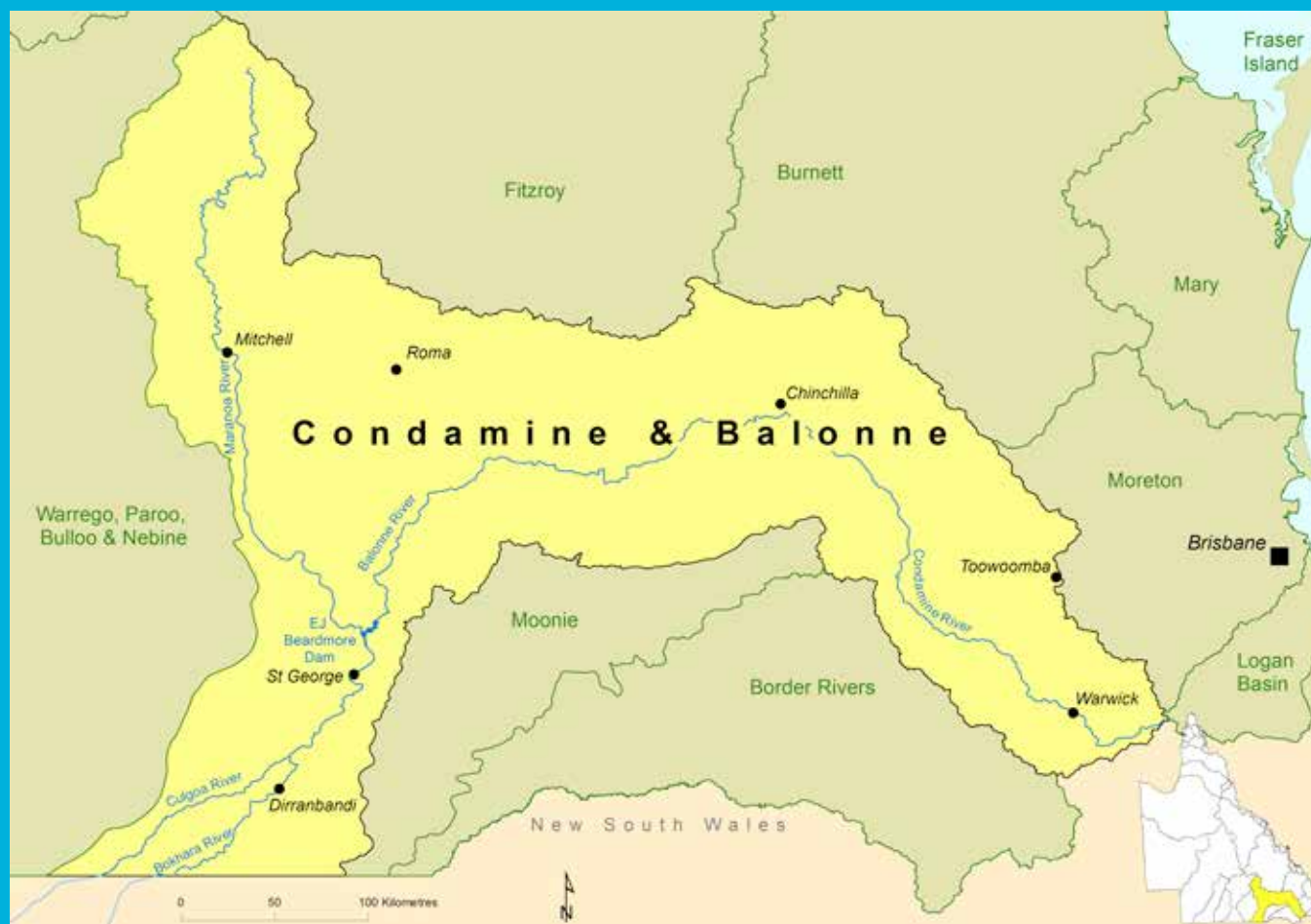
There are no in-stream storages on the Calliope River and the river is one of the few in the region that retains a near-natural flow regime. The WRP limits entitlements for consumptive use to less than seven per cent of the overall mean annual discharge. The primary driver for water planning is to sustainably manage water resources and protect areas of high conservation value.

Consumptive water use is dominated by small-scale irrigation. The basin includes industrial and urban users, but these are supplied from the Awoonga Dam, outside of the WRP area. Non-consumptive uses include tourism as well as commercial and recreational fishing.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2006 and the ROP in 2008.
2. Does the plan include key assessments?	Yes	Key assessments about current and future demand have been undertaken to support the plan. Key risks were examined in the environmental assessment.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The ecological report prepared for the plan area indicates the need to maintain existing flows to protect the environmental values. The plan seeks to protect these values while allowing for limited additional extractions by limiting allocations to around six per cent of mean annual flows and protecting low flows. It does not manage groundwater extractions as these are not a threat to the resource at present.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	No	The plan does not enable trade. The current level of entitlement is low and the WRP specifies unallocated water reserves to meet future demands. The plan also requires all licences to include volumetric limits. The reliance on unallocated water to meet future demand is not consistent with the NWI outcomes of promoting water use efficiency or facilitating water going to the highest-value use.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan manages the take of overland flow water. Rural stock and domestic use is expected to remain relatively stable and forestry was not considered a risk to the water resource.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan recognises connectivity but does not manage groundwater. Groundwater extraction is used primarily for stock and domestic purposes and significant additional extraction is considered unlikely. Groundwater bore drilling requires a licence and is being monitored.
8. Does the plan contain accountable environmental watering arrangements?	Yes	One of the plan's outcomes is to support natural ecosystems by minimising changes to natural flow regimes. The plan includes strategies to achieve this outcome by way of extraction limits and rules to protect low flows.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in general terms in the WRP and in more detail in the ROP. Monitoring has been reported through WRP annual reports (e.g. flow). Ecological monitoring has previously been undertaken through EFAP but no monitoring was completed in 2011–12 and there is no indication of when it will resume. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions but includes pass-flow rules on licences. Critical human needs are met from water outside of the plan area. The Central Queensland Regional Water Supply Strategy considers the impacts of longer-term climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP and ROP followed the usual path for extensive engagement with stakeholders as specified in the WA 2000.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies and that plan outcomes are being met, although from the evidence available it is difficult to assess whether all plan outcomes are being achieved.

CONDAMINE AND BALONNE WATER RESOURCE PLAN 2004



Context

The Condamine–Balonne catchment is located in south-west Queensland and covers almost half of the Queensland section of the Murray–Darling Basin. The rivers in the plan area are ephemeral, with waters flowing across the NSW and Queensland border into the Barwon River or the terminal Ramsar-listed Narran Lakes.

Rainfall across the catchment is highly variable, ranging from 1200 mm on the eastern ranges to 400 mm in the west. Most rainfall occurs during the summer months, but as the catchment lies within the semi-arid zone, droughts and floods are common.

The plan manages both supplemented and unsupplemented water, as well as harvesting of overland and floodplain flows. The major storages in the system are the Leslie Dam and EJ Beardmore Dam. There are also several smaller supplemented supply schemes such as the Chinchilla Weir and Maranoa River water supply schemes. Floodplain harvesting infrastructure is particularly common in the Lower Balonne area.

The Condamine–Balonne catchment supports irrigated and dryland agriculture, including cotton and grazing. Urban water is supplied from the major storages. Natural gas production, especially coal seam gas, is an important industry in the region.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The final WRP was gazetted in 2004 and has been extended to remain in force until June 2019 unless replaced earlier. The ROP was implemented in 2008 and amended in 2010 and 2011. A further ROP amendment is at the consultation draft stage.
2. Does the plan include key assessments?	To some extent	Most key assessments were undertaken to support the plan. Risks to the broad riverine environment and the Narran Lakes were clearly documented and discussed. Future demands were not clearly documented or assessed.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	While the plan does not explicitly identify any areas of overuse, a key strategy is that any decision made in relation to the plan must not increase the average volume of water taken from the plan area. The plan identifies the Narran Lakes but no other specific environmental assets. Trade-off decisions between environmental and consumptive needs have not been made explicit.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly identified outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	Yes	The plan facilitates trade and explains that the reasons behind barriers to trade, such as trading zones and volumetric limits, are to ensure that environmental and third-party impacts of trade are minimised and that the plan's outcomes are met. The draft ROP amendment establishes tradeable allocations in the Gowie and Oakley subcatchments.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The take of overland flow is regulated and managed under authorisations in accordance with the requirements of the plan, but growth in stock and domestic extractions have not been considered. Impacts of coal seam gas activities on the water resources are not considered by the current plan.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan does not manage groundwater at present, although streamflow losses to groundwater have been allowed for in surface flow modelling. An amendment to the plan is being drafted to incorporate the management of all groundwater within the plan area.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has accountable environmental watering arrangements. While the watering needs of the Ramsar-listed Narran Lakes are identified, the watering needs of other environmental assets within the plan area are not.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through the SRA, WRP and EFAP annual reports. There is limited reporting against plan outcomes in WRP annual reports although further details were provided in the Minister's five-yearly report. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. Modelling of future climatic conditions was undertaken as part of the five-year review. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP involved extensive engagement with a wide cross-section of the community and included community meetings and submissions on the draft plan. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report. Consultation on the ROP amendments has been supported through the release of a consultation draft.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies and that plan outcomes are being met, however from the evidence available it is difficult to assess whether all plan outcomes are being achieved.

COOPER CREEK WATER RESOURCE PLAN 2011



Context

One of Queensland's iconic Channel Country rivers, Cooper Creek, is part of the Lake Eyre Basin. The Cooper Creek system extends into NSW and South Australia, covering an area of 296 000 square kilometres. The plan area for the Cooper Creek WRP covers the Queensland section of the catchment, which comprises about 80 per cent of the total catchment. Rainfall is highly sporadic and prolonged dry periods are common.

There are no significant storages on the Cooper Creek and the river retains a near-natural flow regime. The WRP limits entitlements for consumptive use to less than two per cent of the overall mean annual discharge. The primary driver for water planning is to protect areas of high conservation value and waterholes, which are important refuges during dry periods. The significance of the basin as a national asset is enshrined in the Lake Eyre Basin Intergovernmental Agreement, to which Queensland is a signatory.

The predominant use of water is for grazing as well as town water supply. Mining activities are likely to increase competition for water in the future.

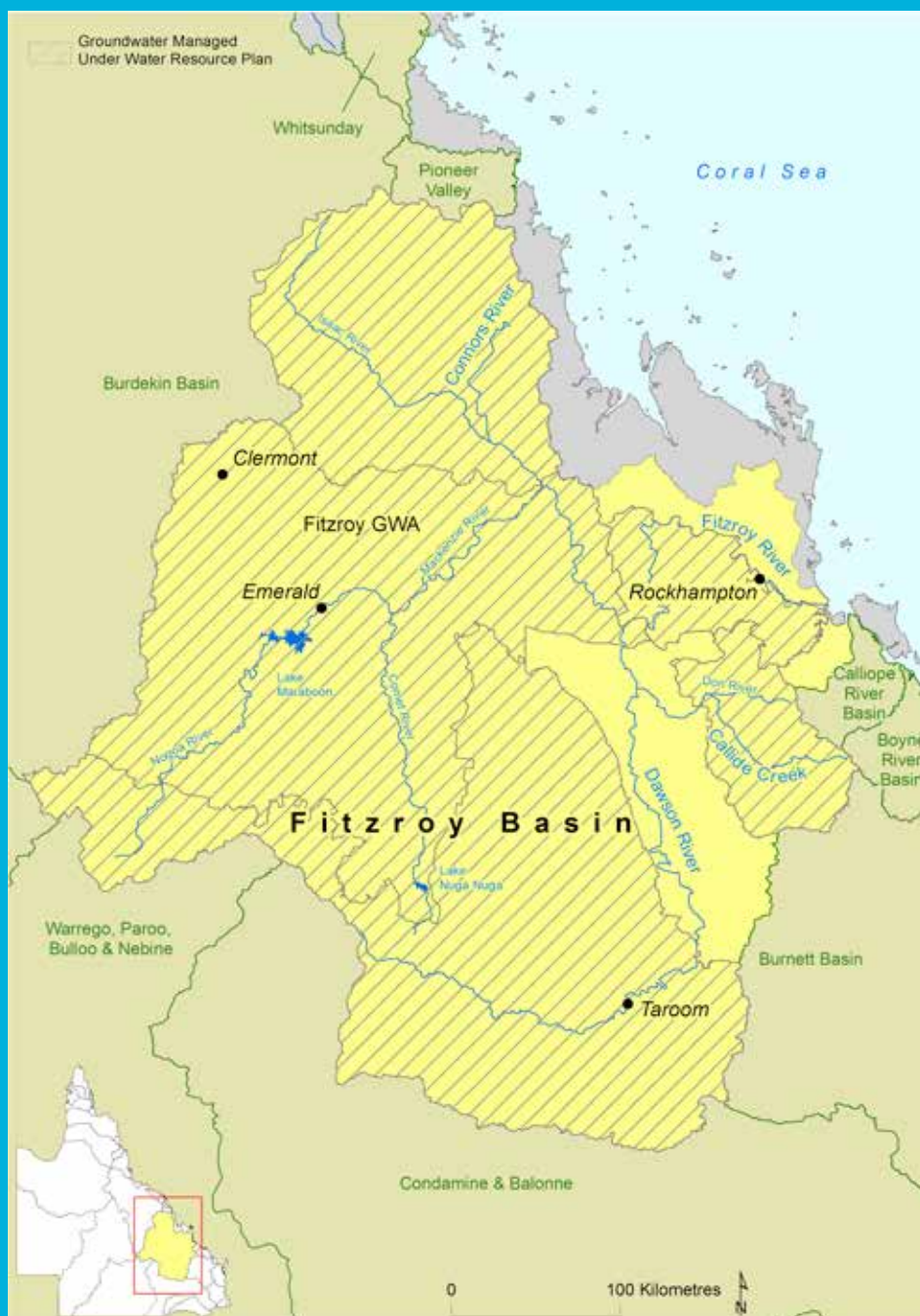
The first WRP was implemented in this area in 2000. Queensland conducted a 10-year review of the plan, and prepared a draft replacement plan that underwent public exhibition and was finalised in 2011. The replacement plan also manages overland flow. This assessment is based on the replacement plan unless specific reference is made to the original water resource plan.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP has been in place since 2000. A replacement WRP was finalised in 2011 and the ROP in 2013.
2. Does the plan include key assessments?	Yes	Key assessments have been undertaken as part of the plan replacement process. These assessments include future water needs. Key risks to the resource were examined.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify overuse and the river system is considered to be in a near-natural state. The area is subject to a Wild River declaration, although the Queensland Government announced its intention to revoke the declaration in November 2013. The plan aims to prevent overuse of surface water through limiting extraction to less than two per cent of average flows.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes measurable outcomes and monitoring arrangements. While the ROP links operational rules to the WRP outcomes, the links between monitoring arrangements and outcomes are not explicitly stated. The plan does not contain water security or environmental flow objectives given the unreliability of flows and the low level of water extractions permitted under the plan.
5. Does the plan facilitate trade?	To some extent	The WRP facilitates limited trading through the temporary or permanent relocation of licences on Longreach Waterhole. The plan also facilitates permanent relocation of sleeper licences on Currareva Waterhole to upstream parts of the catchment.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan manages the take of overland flow and limits the capacity of new works to 10 ML. The plan includes a strategic reserve for purposes such as mining, but mine dewatering impacts are not considered. Other forms of interception were not assessed as a risk to the resource.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan explicitly manages groundwater contributions to surface water. Given that only around two per cent of surface water is available to be allocated, there is little potential for surface water extractions to reduce groundwater recharge.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan provides for environmental water through minimising impacts on natural flows. This is done by limiting extractions to a small proportion of the annual flow volume.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The requirements for monitoring and reporting are specified in the WRP and ROP but lack detail. The first ROP was released in November 2013 so it is too early for monitoring to be reported against plan outcomes. Ecological monitoring is being undertaken and reported through the Lake Eyre Basin Rivers Assessment, but the new ROP does not require the collection of information against the plan's ecological outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	Hydrological modelling for the plan included climate change scenarios and consideration of variable inflows. To minimise these impacts the plan has adopted a precautionary approach and only allows for the extraction of a small proportion of the average annual flows.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the replacement WRP has involved extensive stakeholder engagement in line with the requirements of the WA 2000. The needs of local Indigenous groups have been recognised.
12. Have identified outcomes been achieved during the reporting period?	Yes	The 2000 plan contained a set of principles that the 2011–12 annual report indicated were met. The assessment of Cooper Creek for a Wild River declaration in 2010 found the river's environmental values had been maintained.

FITZROY BASIN

WATER RESOURCE PLAN 2011



Context

The Fitzroy Basin catchment is the largest coastal basin in Queensland, covering about 140 000 square kilometres, and incorporating major towns and regional centres such as Rockhampton, Biloela and Emerald. The Fitzroy Basin discharges into the southern end of the Great Barrier Reef. Rainfall and run-off are highly variable and evaporation rates are high.

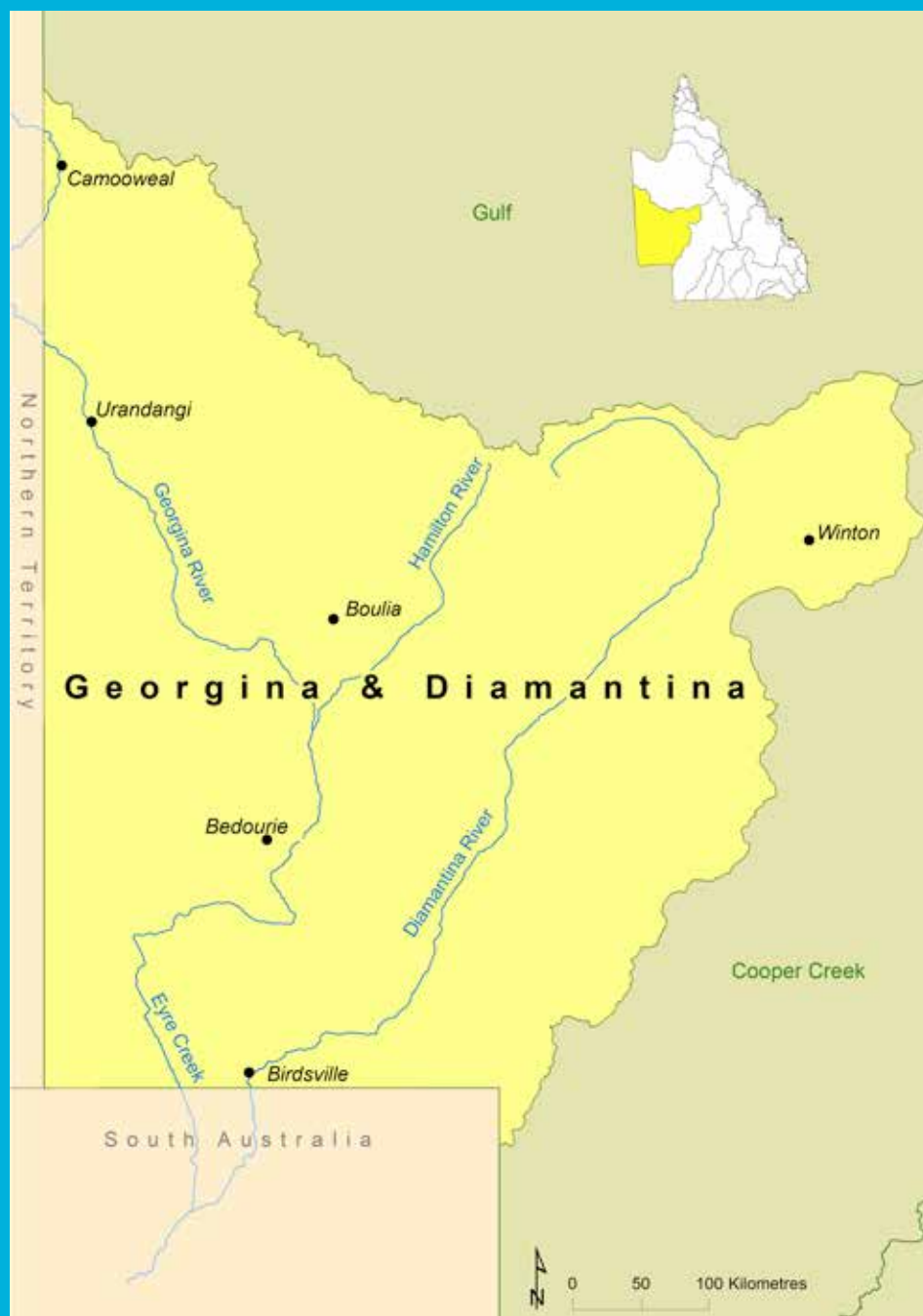
Water in the plan area supports several industries including agriculture, power generation and mining, as well as urban supply. The original Fitzroy WRP included management of supplemented water supply schemes, unsupplemented water and overland-flow water.

The first WRP was implemented in 1999. Queensland conducted a 10-year review of the plan and prepared a draft replacement plan that underwent public exhibition and was finalised in 2011. The replacement plan continues to manage surface water, including overland flow, but also manages subartesian groundwater. This assessment is based on the replacement plan unless specific reference is made to the original Fitzroy WRP.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The second-generation WRP was finalised in 2011, replacing the original 1999 plan. The original ROP was finalised in 2004 and amended most recently in 2011. A consultation draft ROP to implement the 2011 WRP was released in October 2013.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the plan. Risks to key environmental assets were clearly documented and assessed.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The WRP addresses the overallocation of groundwater in the Callide Valley groundwater area through a water entitlement reduction regime, which will be implemented when the ROP amendment is finalised.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly specified outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified in the WRP and draft ROP and information collected must be used to assess the achievement of plan outcomes. There is a lack of detail as to what monitoring will be undertaken.
5. Does the plan facilitate trade?	Yes	The plan enables trade for most unsupplemented and supplemented surface water entitlements, although there are some unsupplemented water licences that cannot be traded. Trade is also enabled for groundwater entitlements in parts of the Callide Valley.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan includes management for stock and domestic extraction, overland flow harvesting and mining extractions and dewatering.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan requires consideration of connectivity for the development of the environmental management rules. Water licensing has been extended to additional groundwater areas and there are seasonal baseflow rules in the ROP to provide for dam water releases to maintain connectivity.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan contains environmental objectives and accountable environmental watering arrangements, and environmental assets and their water needs have been clearly identified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Monitoring and reporting arrangements are specified in the WRP and draft replacement ROP. Monitoring against outcomes of the 2011 WRP will be conducted and reported regularly in WRP annual reports once the draft replacement ROP is in place. A detailed assessment against the 1999 WRP outcomes informed the development of the 2011 WRP. The WA 2000 provides arrangements for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. Modelling of future climatic conditions was conducted as part of the 10-year review. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP involved extensive stakeholder engagement through a Community Reference Panel and other public consultations. Consultation on the new ROP has been supported through the release of a consultation draft.
12. Have identified outcomes been achieved during the reporting period?	Yes	The broad outcomes in the 1999 WRP have been achieved during the 10-year life of the plan. These include security for users, establishment of a water market, provision of an unallocated reserve to allow for future development and effective water management rules to provide for non-consumptive uses. Environmental flow objectives and performance indicators have been reviewed and refined in the 2011 WRP. The 2011 WRP has not yet been implemented through a new ROP.

GEORGINA AND DIAMANTINA WATER RESOURCE PLAN 2004



Context

The Georgina and Diamantina catchments are located in the far-west Channel Country of Queensland and, together with the Cooper Creek catchment, form the Queensland portion of the Lake Eyre Basin. The plan area for the Georgina and Diamantina WRP comprises the Queensland section of the catchments and covers about 266 000 square kilometres. Rainfall is highly sporadic and prolonged dry periods are common.

There are no significant storages on the Georgina or Diamantina rivers and they retain a near-natural flow regime. The plan manages unsupplemented extractions and overland flow harvesting in the plan area. Only a very small number of licences have been granted in the plan area. The plan also sets aside unallocated water for future mining operations and growth in town water supply needs.

The primary driver for water planning is to protect areas of high conservation value and waterholes, which are important refuges during dry periods. The catchments' waterholes and streams have important cultural values for the region's Indigenous peoples. A significant number of recorded Aboriginal occupation sites are located in the vicinity of these features. The significance of the basins as national assets is enshrined in the Lake Eyre Basin Intergovernmental Agreement, to which Queensland is a signatory.

The predominant use of water is for grazing as well as town water supply. Mining activities are likely to increase competition for water in the future.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2004 and the ROP in 2006.
2. Does the plan include key assessments?	Yes	Key assessments have been undertaken, including the clear identification of important environmental assets, although there is no transparent documentation of risks to the water resource.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse and the river systems currently have a low level of extraction. The plan has an extraction limit in place and trade-off decisions are explicit.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured. The plan does not contain water security or environmental flow performance indicators given the unreliability of flows and the low level of extractions permitted under the plan.
5. Does the plan facilitate trade?	No	Trading is not facilitated although only a small number of licences have been granted in the plan area and demand is low.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan regulates the take of overland flow. The hydrology models prepared also considered the current and future demands for stock and domestic and town water extractions. The plan also includes a strategic surface water reserve for future mining expansion, but mine dewatering impacts are not considered.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan manages extraction from the aquifers that are closely linked to the surface water, while artesian water including the mound springs are managed through the GAB WRP. The plan does not manage the confined subartesian aquifers that may be an important water resource for future mining developments.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan provides for environmental water through minimising impacts on natural flows. This is done through limiting extractions to a small proportion of the annual flow volume.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring is being undertaken and reported through the Lake Eyre State of the Basin Rivers Assessment. The report lacks detailed information about progress towards plan outcomes and no further information has been provided in the WRP annual reports. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan is based on hydrological modelling using historical data. The plan does not consider any future climatic scenarios. Short-term extremes and climate variability are dealt with through flow conditions on licences.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement included consideration of stakeholder and public input during development of both the WRP and ROP, and feedback on how submissions were addressed in finalising the plans was provided through publication of a consultation report. A focus of the consultation was to obtain input from Indigenous and interstate stakeholders. Most amendments to the WRP and ROP also require stakeholder consultation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP but little information has been provided in the WRP annual reports. The WA 2000 contains provisions for compliance and enforcement.

GOLD COAST WATER RESOURCE PLAN 2006



Context

The Gold Coast WRP includes the surface water catchments of the Nerang, Coomera and Pimpama rivers, and Talleybudgera and Currumbin creeks in South East Queensland (SEQ). The Nerang River catchment forms the largest component of the plan area. Rainfall varies across the area, with higher amounts falling along the McPherson Range. Falls are concentrated in the summer months.

The plan manages both supplemented and unsupplemented water. The plan area includes one supplemented water supply scheme, the Nerang Water Supply Scheme, which includes Hinze Dam on the Nerang River and Little Nerang Dam on Little Nerang Creek.

Urban water use accounts for about 70 per cent of consumption, with industrial and agricultural uses also important in the plan area. Water resources in the plan area supply water to the SEQ Water Grid for urban water use both within the plan area and in other parts of the region.

The plan contains strategies to minimise impacts on the natural flow regime and maintain the natural values of the plan area, including the numerous national parks along the ranges and the Ramsar-listed Moreton Bay.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP has been in place since 2006 and the ROP since 2009. The ROP was amended in 2010 to provide for raising of the Hinze Dam wall and a significantly increased allocation to the SEQ Water Grid.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support plan development. They were usually undertaken across the broader SEQ region.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It establishes an extraction limit and sets environmental flow and water allocation security objectives through a clear trade-off process. The plan provides for restrictions to be placed on the drawing of water from waterholes and lakes to preserve cultural and environmental values.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly specified outcomes, along with strategies related to both environmental flows and water allocation security. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	To some extent	Trade has been facilitated via creation of tradeable supplemented water allocations and tradeable unsupplemented water allocations in the highest-priority areas. Although the plan commits to the conversion of other unsupplemented water entitlements to tradeable water allocations, this has not yet occurred.
6. Is interception appropriately considered and integrated into the plan?	Yes	Significant capture of overland flows occurs in the plan area, although urban development is expected to limit increased interception. The plan does not manage the capture of overland flows, but its impact has been factored into hydrological modelling and the setting of allocation limits. The plan also commits to ongoing monitoring of the interception of overland flows with reporting after three years.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	Although the plan does not manage groundwater extractions, the potential impact on groundwater is one consideration when making decisions about the granting of new surface water entitlements in the plan area. The plan commits to ongoing monitoring of groundwater levels and the level of development of works to take subartesian water – with reporting after three years.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has an extensive set of environmental flow objectives. The ROP contains provisions for the resource operations licence holder to release water from storages to provide for environmental flows, as well as to monitor and report on release quantities and water quality. Environmental low flows are also protected through a requirement to include a flow condition on any new entitlements for taking water from unsupplemented watercourses.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in general terms in the WRP and in more detail in the ROP. Monitoring is reported through WRP and EFAP annual reports (e.g. flow, trade, water use and ecological), but results are not always reported against plan outcomes. It is unclear whether monitoring will enable an assessment of progress against all of the plan's ecological outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements. The issues of climate change and variability have been major drivers of the SEQ Water Supply Strategy and the SEQ Water Grid. The Gold Coast plan contributes to this strategy through the Nerang Water Supply Scheme's supply of water to the SEQ Water Grid.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive stakeholder engagement as required by the Act. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies. Plan outcomes are partially being met, although there is insufficient evidence to assess whether detailed environmental flow objectives are being achieved.

GREAT ARTESIAN BASIN WATER RESOURCE PLAN 2006



Context

The Great Artesian Basin (GAB) is a multi-layered system of pressurised aquifers underlying much of Queensland as well as significant parts of NSW, South Australia and the Northern Territory. As a whole the GAB has been the subject of coordinated efforts to promote sustainable management since 1999 through the multi-governmental Great Artesian Basin Consultative Council, with Queensland an active participant.

The WRP covers the Queensland component of the GAB, which includes about 70 per cent of the state. Recharge to the Queensland component of the GAB occurs on the eastern margins of the basin. Natural discharge from the GAB occurs via mound springs in the south and south-west of the basin. The mound springs have high conservation value because of the 'oasis' habitat they provide in otherwise arid lands for a variety of species including plants, fish and snails that do not occur elsewhere. They also have a high spiritual and cultural value to Indigenous communities.

Water from the GAB sustains much of the pastoral industry in western Queensland and supplies water to many towns. The number of free-flowing bores in the past has resulted in substantial declines in pressure in many areas. This is being progressively addressed through the Cap and Pipe program known as the Great Artesian Basin Sustainability Initiative (GABSI) and is complementary to the WRP, which provides for the active management of the resource.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2006 and the ROP in 2007. The ROP was amended in 2012 to streamline the process for the release of unallocated water.
2. Does the plan include key assessments?	Yes	Key assessments for the GAB were undertaken to support the plan. While water extractions associated with coal seam gas are not licensed under the WA 2000, cumulative impact assessments are being undertaken by the Queensland Water Commission.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	Overuse of the GAB and subsequent declines in pressure have been recognised. Returning the GAB to sustainable levels of extraction is the main focus of the GABSI. Actions under GABSI are being taken in parallel with the management strategies contained in the WRP and ROP to effect water efficiencies and sustainable management of GAB water. The WRP only reallocates around 30 per cent of water savings from GABSI to ensure the system is returned to sustainable use. The plan considers eight of the 25 management areas to be fully allocated.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The WRP includes general outcomes with strategies and monitoring linked to these outcomes. Inclusion of more specific objectives would support an informed assessment of progress towards meeting plan outcomes.
5. Does the plan facilitate trade?	To some extent	Water licences in the GAB have not been separated from land, although trade of licences is possible and is occurring where sufficient demand exists.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan regulates stock and domestic, irrigation, mining and industry extractions. Coal seam gas exploration and extraction activities occur in a small percentage of the basin area. Water extractions associated with coal seam gas are not licensed under the WA 2000. Nevertheless, the WRP specifies that water is unavailable for future allocations in aquifers associated with formations from which coal seam gas is produced.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan addresses connectivity through the protection of flows to springs and surface water flows sourced from the GAB.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan contains arrangements to ensure GDEs are protected. The planning documents note that investigations are continuing to better understand the hydrology of springs.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Monitoring has been undertaken and reported through WRP annual reports and the five-year review. The plan does not identify key risks as such, although it does identify key ecological assets. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	Given that recharge occurs over very long timeframes, climate change and extremes in inflows will not affect the availability of the resource in the foreseeable future. Managing GAB extractions through the maintenance of surface water pressure is occurring.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP followed the usual path for extensive engagement with stakeholders as specified in the WA 2000 and included Indigenous as well as interstate interests. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	Yes	The five-year review indicates that progress is being made in achieving all WRP outcomes. However, the inclusion of more specific objectives would improve assessment of progress towards meeting plan outcomes.

GULF WATER RESOURCE PLAN 2007



Context

The Gulf WRP includes eight surface water catchments which flow into the Gulf of Carpentaria as well as designated non-Great Artesian Basin (GAB) groundwater resources. Rainfall is predominantly seasonal with around 80 per cent of falls occurring between December and March.

The WRP covers a diverse area which includes a highly developed water system on the upper reaches of the Leichhardt River around Mt Isa, as well as several areas with low levels of development: some of these have been designated for the protection of their natural values under the Wild Rivers Act. The WRP also provides water for Indigenous communities to help them achieve their social and economic aspirations.

Entitlements for consumptive use represent less than one per cent of the overall mean annual discharge. Consumptive water use includes urban supply, mining and small-scale irrigation. Non-consumptive uses include tourism as well as recreational and commercial fishing.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2007. The ROP was finalised in 2010 and amended in 2011 to allow water licences granted from the Indigenous reserves to be seasonally assigned. A draft ROP amendment to provide for the seasonal and permanent transfer of water licences in the Flinders and Gilbert river catchments was released for public consultation in December 2013. A review of unallocated water volumes stated in the WRP for the Flinders and Gilbert river catchments has been announced.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the plan, including assessments of the main risks to the future of the water resources. New studies to assess the potential for increased water extractions to support agricultural expansion have been completed by CSIRO as part of the Flinders and Gilbert agricultural resource assessments.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse and has an extraction limit in place. Environmental flow objectives, including the number of low-flow periods, are specified for the catchment with high levels of consumptive use.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes measurable outcomes and monitoring arrangements. Water has also been allocated to an Indigenous reserve to be used to support Indigenous people to achieve their economic and social aspirations. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	Yes	The plan establishes tradeable allocations in the area of greatest consumptive demand, namely the Mt Isa region. Trading of licences is also possible in a reach of the Gilbert River. A draft ROP amendment was released in December 2013 proposing to expand these trading arrangements for the Gilbert catchment and provide for trading in the Flinders. In other areas licences are not tradeable, but little demand exists for trading in these areas.
6. Is interception appropriately considered and integrated into the plan?	Yes	Interception activities are included in the plan. In particular, the major mines in the Mt Isa region operate with a water licence and overland flow storages of more than 250 ML require a licence. There is little plantation forestry in the area. Interception from mine dewatering is not considered a risk in the plan or supporting documents.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan recognises connectivity between surface water and groundwater. Groundwater and surface water are managed as one resource within the plan except for GAB groundwater, which is managed under its own plan. The plan includes strategies to ensure that works that access aquifers overlaying the GAB do not inadvertently intercept GAB water.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Four catchments are declared Wild River areas, where water management arrangements must be consistent with the purpose of the Wild River declarations. While environmental flow objectives are not explicit for most of the plan area, only a small proportion of average flows are available for extraction. In the most highly developed area – the upper Leichhardt River – there are explicit environmental flow objectives that minimise the streamflow impacts of two large-scale in-stream dams.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through WRP annual reports. These indicate that while hydrological monitoring is occurring, there is little evidence of ecological monitoring. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements.

Report card criteria	Assessment	Commentary
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP followed the path for engagement with stakeholders specified in the WA 2000. Extensive consultation was undertaken at key stages of the water planning process. Public feedback was provided on how submissions were addressed in finalising the plan through publication of a consultation report. Consultation on the ROP amendments has been supported through the release of a consultation draft.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies and that plan outcomes are partially being met. From the evidence provided it is difficult to assess whether all plan outcomes are being met.

LOGAN BASIN WATER RESOURCE PLAN 2007



Context

The Logan Basin WRP includes the surface water catchments of the Logan and Albert rivers and Redlands area in South East Queensland (SEQ). The Logan and Albert rivers form the largest component of the plan area. Rainfall across the catchment is highly variable, ranging from 700 mm in the western areas to 3300 mm in the south. Most rainfall occurs during the summer months, but significant falls can also occur during winter.

The plan manages both supplemented and unsupplemented water. Although the plan does not include the management of groundwater or overland-flow water, it commits to monitoring groundwater levels and regular assessment of the level of development of works for taking overland flow and subartesian water.

The plan area includes the Logan River Water Supply Scheme, which includes Maroon Dam on Burnett Creek, Bromelton and South Maclean weirs on the Logan River and Bromelton Offstream Storage, which diverts water from the Logan River. The ROP was amended in 2012 to incorporate the newly constructed Wyaralong Dam on Teviot Brook.

Urban water use accounts for most of the water consumption in the plan area but there is also significant water extraction for agricultural purposes. Water resources in the plan area supply water to the SEQ Water Grid for urban water use both within the plan area and in other parts of the region.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2007 and the ROP in 2009. The ROP was amended in 2012 to include Wyaralong Dam and a further ROP amendment to create tradeable allocations in Running and Christmas creeks is at consultation draft stage.
2. Does the plan include key assessments?	Yes	Key assessments have been undertaken and environmental assets identified, although there is no clear process for documenting all risks to the water resource.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse and establishes a cap on extractions. It sets environmental flow and water allocation security objectives through a clear trade-off process.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly specified outcomes, along with strategies related to both environmental flows and water allocation security. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	To some extent	Trade has been facilitated through the creation of tradeable supplemented water allocations and tradeable unsupplemented water allocations in the highest-priority areas. A draft ROP amendment proposes to create tradeable allocations in the Running and Christmas creeks.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception of overland flow was considered to be insignificant and was accounted for in the plan's development. It is unclear whether other forms of interception have been considered, especially the risk of stock and domestic use increasing through peri-urban expansion.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan identifies areas of connectivity between groundwater and surface water. Mainland groundwater resources were assessed as stable and the plan commits to ongoing monitoring of groundwater levels and development of works to take subartesian water. Potential impact on groundwater is also one consideration when granting new surface water entitlements. The Minister has announced that previously proposed plan amendments to include management of the groundwater resources of the southern Moreton Bay Islands are no longer required.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has an extensive set of environmental flow objectives. The ROP contains provisions for resource operations licence holders to release water from storages to provide for environmental flows, as well as to monitor and report on release quantities and water quality. Low flows are also partially protected through a requirement to include a flow condition on any new entitlements for taking water from unsupplemented watercourses.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring is reported through WRP and EFAP annual reports (e.g. flow, trade, water use and ecological), but the results are not always reported against plan outcomes. It is unclear whether monitoring will enable an assessment of progress against all of the plan's ecological outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions, although the issues of climate change and variability have been major drivers of the SEQ Water Supply Strategy and the SEQ Water Grid. The Moreton WRP contributes to this strategy through the supply of water to the SEQ Water Grid. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	Engagement included the consideration of stakeholder and public input during development of both the WRP and ROP. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report. Consultation on the ROP amendments has been supported through the release of a consultation draft.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies and that plan outcomes are partially being met. From the evidence provided it is difficult to assess whether all plan outcomes are being met.

MARY BASIN WATER RESOURCE PLAN 2006



Context

The Mary Basin WRP includes the surface water catchments of the Mary and Burrum rivers and the Sunshine Coast. The southern part of the plan area is within the South East Queensland (SEQ) region. Annual rainfall across the area varies from 800 to 2000 mm and predominantly occurs in summer.

The plan manages supplemented and unsupplemented surface water as well as groundwater in the Cooloola Sandmass Subartesian Area. The plan area includes six water supply schemes and several storages.

Water consumption in the plan area is divided almost evenly between urban and agricultural water uses. Water resources in the southern part of the plan area supply water to the SEQ Water Grid for urban water use, both within the plan area and in other parts of the SEQ region.

The plan has strategies to minimise impacts on the natural flow regime and maintain the natural values of the area, including the numerous national parks along the ranges and the Ramsar-listed Great Sandy Strait. The Cooloola Sandmass Subartesian Area is managed to support internationally recognised wetlands and GDEs and to prevent seawater intrusion.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP has been in place since July 2006 and the ROP since September 2011.
2. Does the plan include key assessments?	Yes	A comprehensive set of key assessments supported plan development. These assessments included comprehensive community consultation, such as with Indigenous traditional owner groups. The key assessments and consultations are explicitly linked to the plan outcomes.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It establishes an extraction limit and sets environmental flow and water security allocation objectives. While trade-off decisions are not explicit, the plan imposes restrictions on the drawing of water from waterholes and lakes to preserve cultural and environmental values. Closer monitoring is proposed in highly developed areas.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly specified outcomes, along with objectives and strategies related to both environmental flows and water allocation security. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	Yes	Trade has been facilitated through the creation of tradeable supplemented water allocations. The conversion of unsupplemented water entitlements to tradeable water allocations in priority areas has been achieved through the ROP amendment released in September 2011.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Pre-planning assessments considered that the harvesting of overland flows did not pose a significant risk. Plantation forestry occurs in the Mary Basin but water for plantations is not managed by the plan.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan manages surface water as well as groundwater from the Cooloola Sandmass. While no other significant groundwater resources are located in the plan area, the potential impact on groundwater is a consideration in making decisions about the granting of new surface water entitlements. The plan commits to ongoing monitoring of groundwater levels and the level of development of works to take subartesian water in areas outside of the Cooloola Sandmass Subartesian Area.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has an extensive set of environmental flow indicators. The ROP contains provisions for the resource operations licence holder to release water from storages to provide for environmental flows, as well as to monitor and report on release quantities and water quality. Flow conditions are included in any new entitlements for taking water from unsupplemented watercourses. The potential impacts on GDEs are considered in making decisions about granting additional groundwater entitlements in the Cooloola Sandmass Subartesian Area.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Detailed monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring is reported through WRP and EFAP annual reports (e.g. flow, trade and ecological), but the results are not always reported against plan outcomes and it is unclear whether monitoring will enable an assessment of progress against all of the plan's ecological outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions, but the issues of climate change and variability have been major drivers of the SEQ Water Supply Strategy and the SEQ Water Grid. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP involved extensive stakeholder engagement. The formation and use of representative groups for various industry sectors was in addition to the requirements specified in the Act. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies and that plan outcomes are being met, however from the evidence provided it is difficult to assess whether all plan outcomes have been achieved.

MITCHELL WATER RESOURCE PLAN 2007



Context

The Mitchell River flows into the Gulf of Carpentaria and is one of Queensland's most significant river systems by volume. The WRP covers almost the entire catchment, although the upper reaches that are supplemented by the Mareeba Dimbulah Water Supply Scheme are included in the Barron WRP. The WRP also includes designated non-Great Artesian Basin (GAB) groundwater resources. The rainfall is predominantly seasonal with around 80 per cent of falls occurring between December and March.

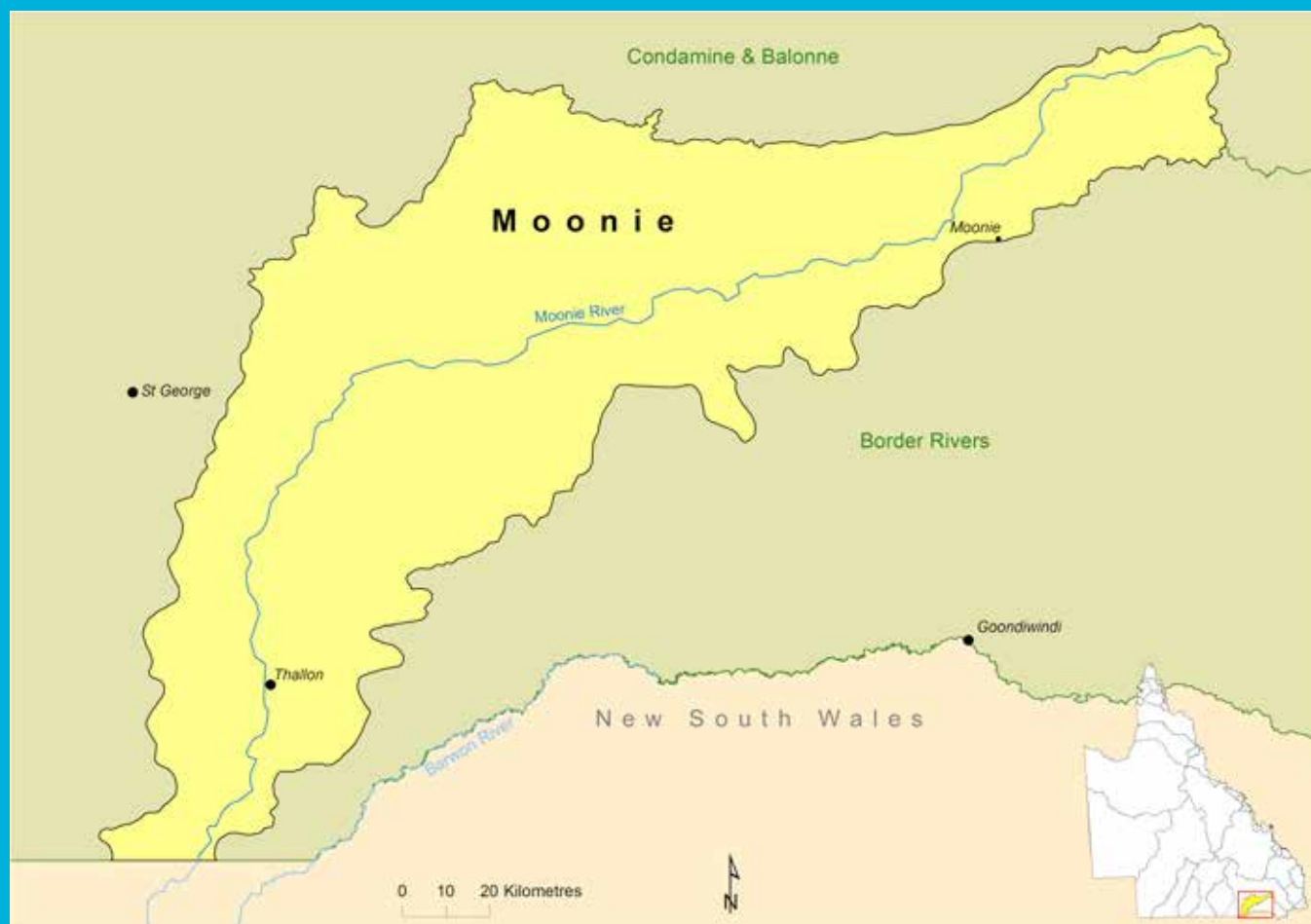
There are low levels of development in the Mitchell catchment: entitlements for consumptive use represent less than one per cent of the overall mean annual discharge. The primary driver for water planning is to provide for growth while protecting areas of high conservation value. The WRP provides water for Indigenous communities to help them achieve their social and economic aspirations.

Consumptive water use includes urban supply, aquaculture, small-scale mining and small-scale irrigation. Non-consumptive uses include tourism as well as recreational and commercial fishing.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2007 and the ROP in 2009.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the plan, including assessments of the main risks to the future of the water resources.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse and limits further extractions to less than one per cent of mean annual flows. While the ecological report prepared for the plan area indicates a general lack of detailed knowledge about local environmental requirements, the low extraction limit ensures the maintenance of a near-natural flow regime.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly specified outcomes and strategies intended to achieve these outcomes. Water has also been allocated to an Indigenous reserve to be used to help Indigenous people achieve their economic and social aspirations. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	To some extent	The plan does not facilitate permanent trade. Additional demand for water can be met through unallocated reserves. The plan establishes volumetric limits on water licences and introduces metering. Seasonal trading is available in the Upper Mitchell subcatchment area and permanent trading is to be considered in the next iteration of the plan.
6. Is interception appropriately considered and integrated into the plan?	Yes	Overland flow storages of more than 250 ML require a licence. The plan does not consider other interception activities to be a risk to the resource.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	Connectivity between surface water and groundwater is recognised in the plan. Groundwater and surface water are managed as connected resources within the plan except for GAB groundwater, which is managed under its own plan. The plan includes strategies to ensure works that access aquifers overlaying the GAB do not inadvertently intercept GAB water.
8. Does the plan contain accountable environmental watering arrangements?	Yes	There are no explicit environmental watering arrangements, although the plan has rules to limit the extraction of water to a small proportion of annual flows. Water licences under the WRP must include a volumetric limit and restrictions are placed on licences to protect periods of low flow.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through WRP annual reports and indicates that while hydrological monitoring is occurring, there is little evidence of ecological monitoring. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions, although the plan takes a precautionary approach through limiting extractions to around one per cent of mean annual flows.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP followed the usual path for extensive engagement with stakeholders specified in the WA 2000. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies and that plan outcomes are partially being met. There is limited evidence to assess whether ecological objectives are being achieved, but the low extraction limit aims to maintain a near-natural flow regime.

MOONIE RIVER WATER RESOURCE PLAN 2003



Context

This WRP includes the Queensland portion of the Moonie catchment in the state's south-west, and forms part of the Queensland portion of the Murray–Darling Basin. The Moonie River crosses the NSW border where it joins with the Barwon River. Rainfall is concentrated in the summer months.

There are no major storages in the system and no water supply schemes. The plan manages unsupplemented surface water as well as overland flow.

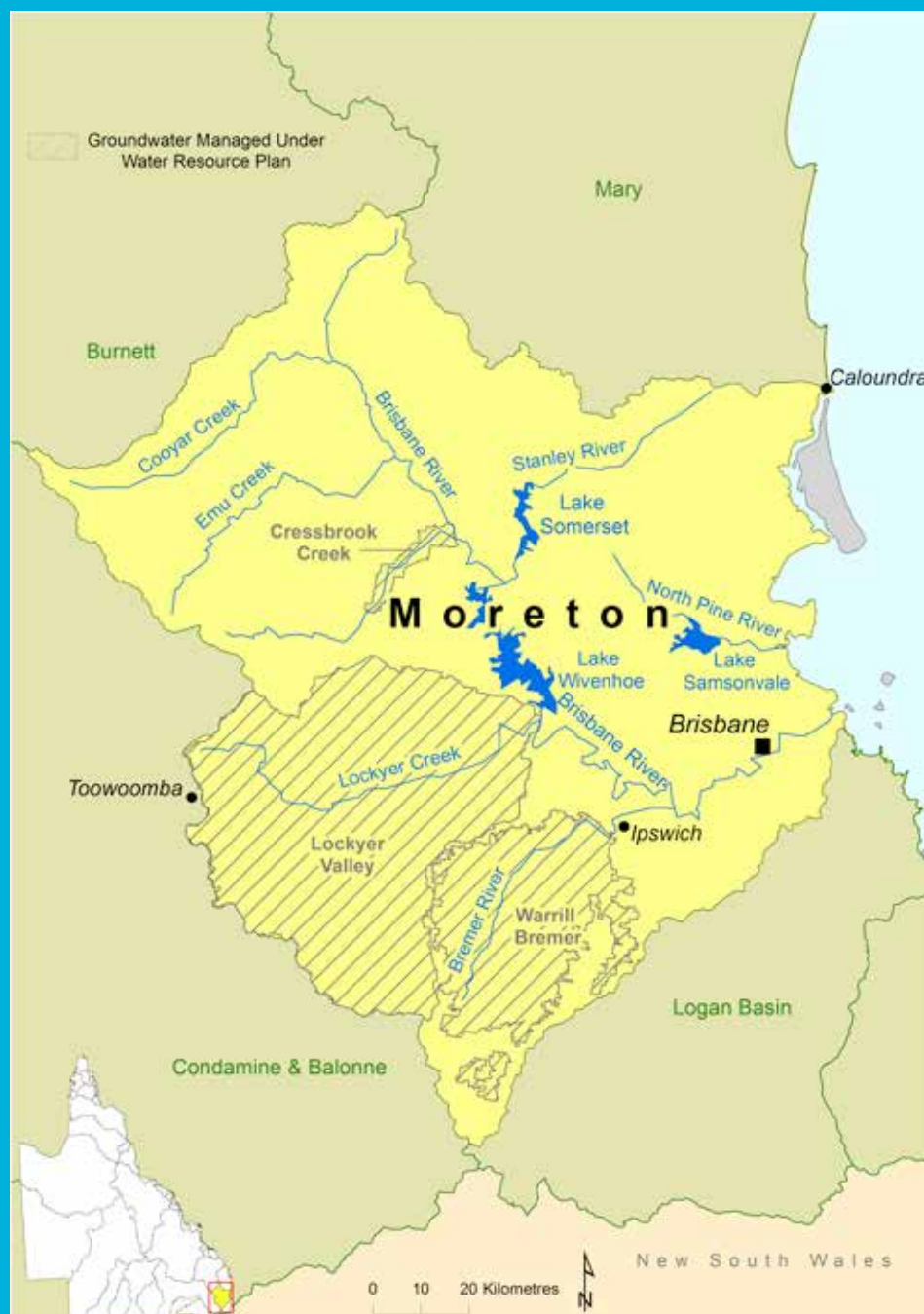
The dominant industry in the plan area is grazing, focusing on beef cattle and wool production. There is an increasing trend towards mixed farming operations and dryland crop production. Irrigation is mostly associated with isolated pockets of cotton and wheat. Oil and gas production, including coal seam gas, are also important industrial activities in the plan area.

The catchment's waterholes and streams also have important cultural values for the region's Indigenous peoples.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2003 and the ROP in 2006. The WRP has been extended to remain in force until June 2019 unless replaced earlier.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support plan development. Environmental assets are specified in the environmental assessments.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It establishes the maximum volumes of water that may be extracted from the plan area to achieve end-of-system flow objectives. The plan also includes flow objectives for a range of flow conditions to prevent seasonal stress.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes measurable outcomes, strategies and monitoring arrangements. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	Yes	Trading has been facilitated in all supplemented and unsupplemented entitlements. The plan clearly explains that water trading rules have been developed to protect the security of supply as well as ecological outcomes.
6. Is interception appropriately considered and integrated into the plan?	Yes	The take of overland flow is regulated and managed in accordance with the plan's requirements. Water use for stock and domestic purposes was assessed as not posing a risk to the water resource.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	Connectivity between surface water and groundwater was considered in the development of the WRP. The area contains limited groundwater in alluvial aquifers – which have been assessed as not being significant. Streamflow losses to groundwater have been accounted for in streamflow modelling. An amendment to the plan is being drafted to incorporate the management of all groundwater within the plan area.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The WRP establishes end-of-system flow objectives. The ROP specifies conditions for accessing water under allocations to ensure flow conditions are met. Unallocated water that was identified in the WRP has been gifted to the Commonwealth Environmental Water Holder.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Detailed monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring is reported through the SRA and WRP annual reports (e.g. flow and trade). Some ecological monitoring has been undertaken through the SRA, but no further monitoring will be undertaken through EFAP until the WRP is replaced. Monitoring results are not always reported against plan outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions. Climate variability is dealt with through pass-flow conditions on water allocations.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP involved extensive engagement with a wide cross-section of the community and included community meetings and submissions on the draft plan. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress has been made towards the achievement of most plan outcomes, although little detail is provided. The report indicates a more complete assessment of plan outcomes will be undertaken at the time of plan replacement. This was originally scheduled for 2016. Legislative changes have been made to facilitate the plan's extension until 2019 as part of the Murray–Darling Basin Plan's implementation.

MORETON WATER RESOURCE PLAN 2007



Context

The Moreton WRP includes the surface water catchments of the Brisbane, Pine and Caboolture rivers as well as the Cabbage Tree and Pumicestone creeks in South East Queensland (SEQ). Rainfall is concentrated in the summer months.

The plan manages supplemented surface water, unsupplemented surface water, groundwater and overland flow in the plan area. The most significant groundwater resources in the plan area are within the Lockyer and Warrill valleys and the Cressbrook Creek Subartesian Area.

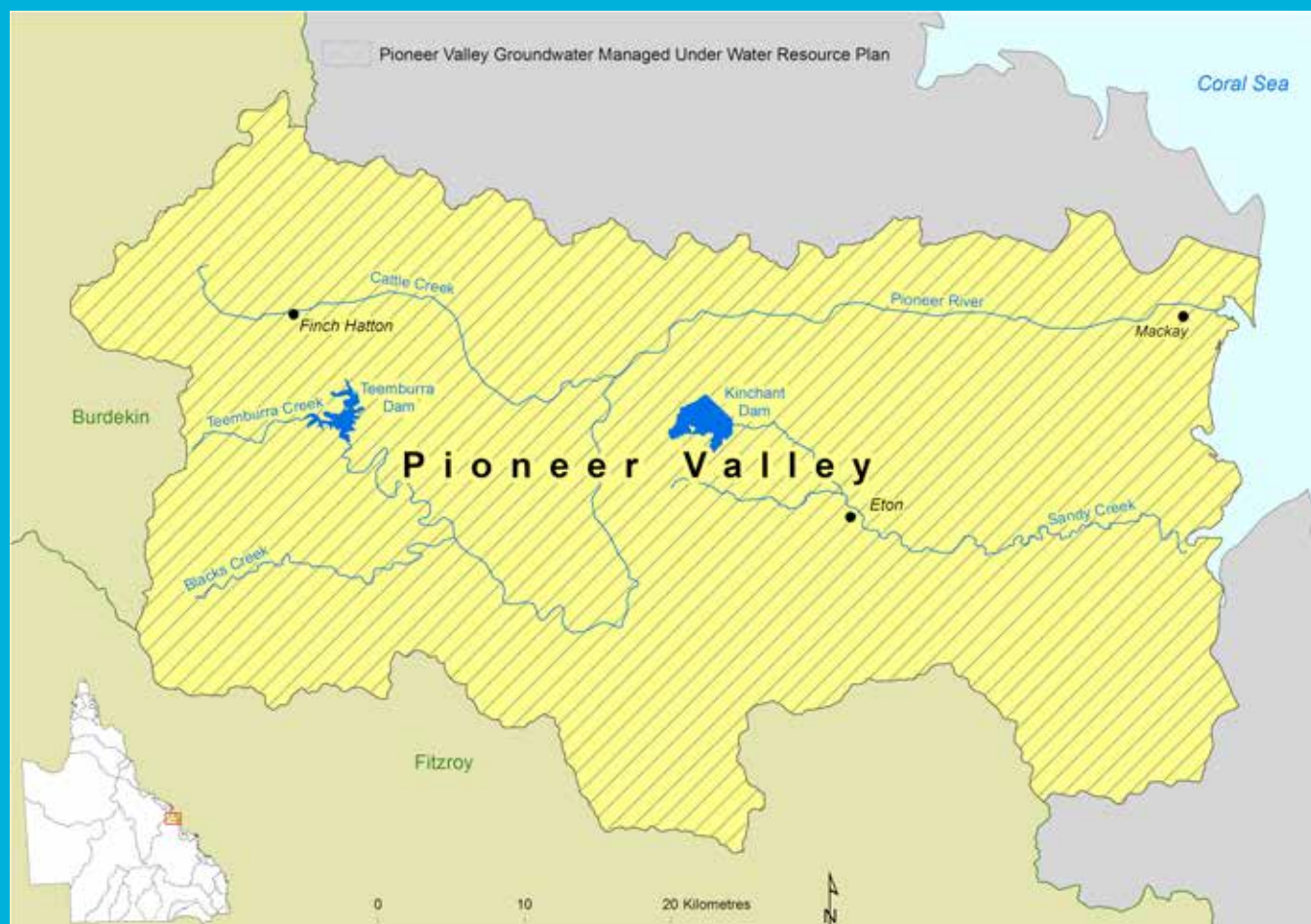
The plan area includes seven water supply schemes and its main storages are the Wivenhoe, Somerset and North Pine dams, which account for more than 80 per cent of the storage.

Urban water use accounts for about 75 per cent of consumption, with agricultural water use significant in the Lockyer and Warrill valleys in particular. Water resources in the plan area supply water to the SEQ Water Grid for urban water use both within the plan area and in other parts of SEQ.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP has been in place since 2007 and the ROP since 2009. Amendments to the ROP to include the Lower Lockyer Valley and Warrill Valley water supply schemes are at the consultation draft stage.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support plan development. These were usually undertaken across the broader SEQ region.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. While trade-off decisions are not explicit, the plan establishes an extraction limit and sets environmental flow objectives and water allocation security objectives. Both these sets of objectives allow for very few additional water entitlements to be granted in the plan area. DNRM has advised that the provisions for the Lockyer and Warrill subcatchment areas will be implemented in 2014.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The WRP has clearly specified outcomes and strategies in relation to water security and environmental flows. The ROP contains a detailed specification of the monitoring that resource operations licence holders are required to undertake although monitoring arrangements lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	To some extent	Trade has been facilitated through the creation of tradeable supplemented water allocations for most water supply schemes in the plan area. The plan commits to the creation of supplemented and unsupplemented tradeable water allocations in priority areas within six years of plan commencement. The draft ROP proposes to create tradeable allocations in the Lower Lockyer Valley and Warrill Valley water supply schemes.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan manages the take of overland flow except for stock and domestic purposes. No other interception activities were considered a significant risk in the plan or supporting documents.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan addresses connectivity and regulates the take of water from both surface water and groundwater systems. The plan regulates the take of groundwater in buffer zones considered to be highly connected to stream baseflows.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has an extensive set of environmental flow indicators. The ROP contains provisions for the resource operations licence holders to release water from storages to provide for environmental flows, as well as to monitor and report on release quantities and water quality.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring has been reported through WRP annual reports (e.g. flow and trade). Ecological monitoring has previously been undertaken through EFAP, but no monitoring has been completed since 2010. Monitoring results are not always reported against plan outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements. The issues of climate change and variability have been major drivers of the SEQ Water Supply Strategy and the SEQ Water Grid. The Moreton plan contributes to this strategy through the supply of water to the SEQ Water Grid.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP involved extensive stakeholder engagement as required by the Act. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report. Consultation on the proposed ROP amendments has been supported through the release of a consultation draft.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies and that plan outcomes are partially being met. From the evidence available it is difficult to assess whether all plan outcomes are being achieved. Further changes to the ROP will be required to deliver some outcomes.

PIONEER VALLEY WATER RESOURCE PLAN 2002



Context

The Pioneer catchment is situated in Queensland's north-east, with the city of Mackay located at the mouth of the Pioneer River. The water exits onto the southern regions of the Great Barrier Reef. Rainfall is highly variable between years, with an annual average of 1000 to 2000 mm across the catchment. Three-quarters of this rainfall occurs in summer.

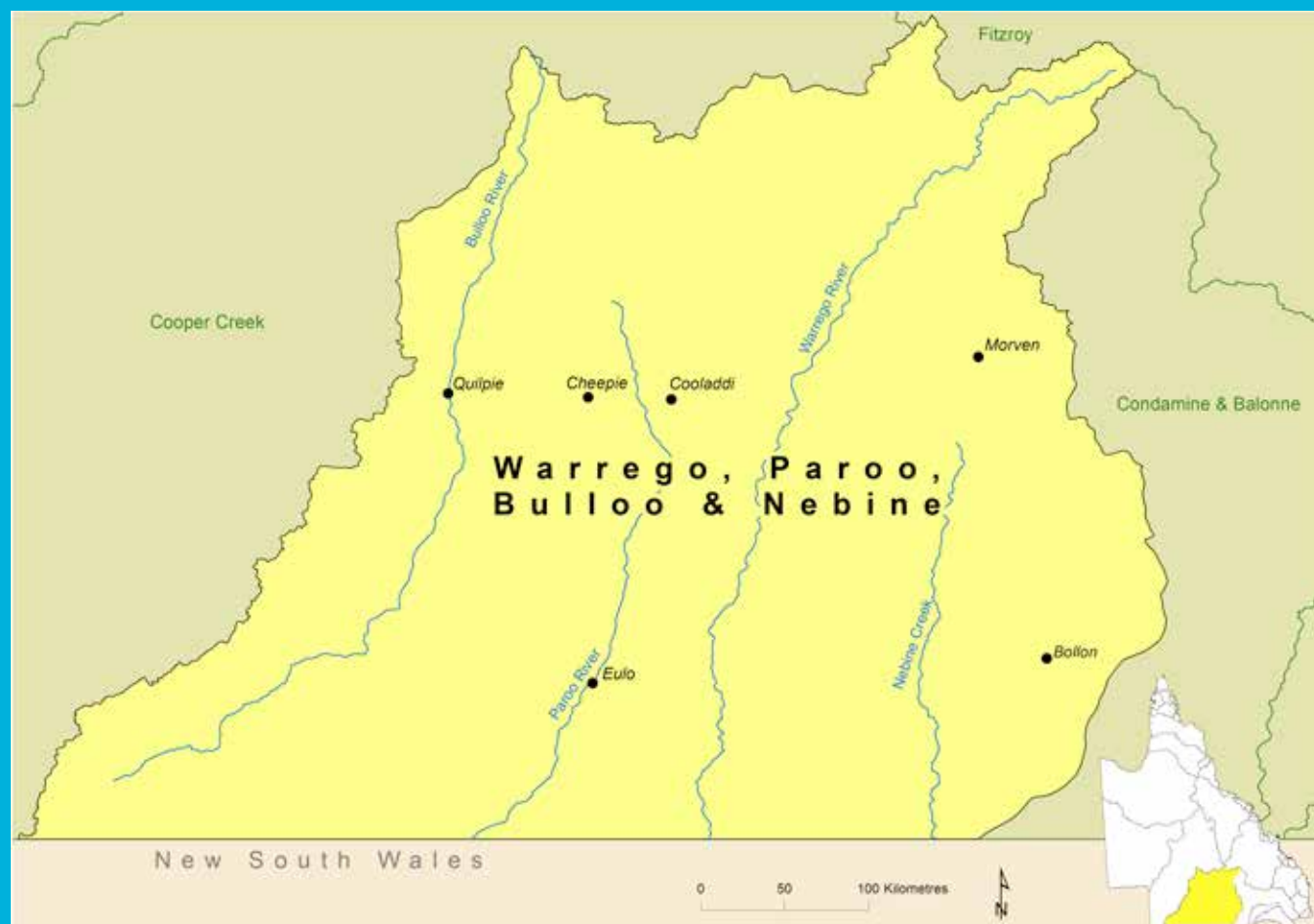
Consumptive water use includes irrigated agriculture and urban water supply for Mackay. The WRP includes management of supplemented water supply schemes, unsupplemented water and subartesian water.

The area's surface water and groundwater has been used to support the sugar and other agricultural industries since the late 1880s. Saltwater intrusion into the coastal alluvial aquifer has been recognised as an issue since the 1930s and its extent was first mapped in 1975. Addressing this issue was a significant focus of the amendment to the WRP in 2009.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was originally released in 2002 and was amended in 2009 to include groundwater management strategies. Unless extended again, the current WRP will expire in August 2014. The ROP was originally released in 2005. DNRM has advised that a draft ROP amendment to implement groundwater strategies is under development.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the plan. Risks to the main environmental assets were clearly documented and assessed, as well as the impacts of further seawater intrusion on water quality in the coastal aquifer.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan identifies the coastal aquifer as overused and at-risk from seawater intrusion. The WRP outlines a clear strategy along with specific timeframes to reduce groundwater extraction in this area. The WRP provisions will be fully implemented once the amended ROP is in place. Overuse is not identified in other areas and an extraction limit is in place. The plan clearly identifies environmental assets and contains explicit trade-off decisions.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly specified outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	Yes	The plan provides a trading framework for surface water entitlements within supply scheme areas, as well as for groundwater. The current ROP provides for trading surface water only. The draft ROP amendment under development is expected to provide for the trading of groundwater entitlements and to include provisions for limiting groundwater trading in high-risk areas to help manage seawater intrusion.
6. Is interception appropriately considered and integrated into the plan?	Yes	Interception is well considered and integrated into the plan. The management measures for stock and domestic bores are comprehensive and address the risks. Interception of overland flow is not considered to be significant in this catchment.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan addresses groundwater and surface water connectivity, and includes rules to protect baseflows from bore extractions during dry periods.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental assets and their water requirements were considered in the setting of the plan's environmental objectives. The ROP has operating and environmental management rules to achieve surface water environmental outcomes.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring is reported through WRP and EFAP annual reports (e.g. flow, compliance, ecological), but the results are not always reported against plan outcomes. It is unclear whether monitoring will enable an assessment of progress against all of the plan's ecological outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions. Short-term extremes and climate variability are dealt with through water sharing rules and critical water supply arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	Engagement included the consideration of stakeholder and public input during plan development. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies and that plan outcomes are partially being met. From the evidence available it is difficult to assess whether all plan outcomes are being achieved. Further changes to the ROP will be required to deliver some outcomes.

WARREGO, PAROO, BULLOO AND NEBINE WATER RESOURCE PLAN 2003



Context

This WRP includes the catchments of the Warrego, Paroo, Bulloo and Nebine rivers in south-west Queensland. The Warrego, Paroo and Nebine catchments lie within the northern Murray–Darling Basin and drain into the Darling and Culgoa rivers in north-west NSW. The Bulloo River ends at Bulloo Lakes near the Queensland and NSW border. The plan manages supplemented and unsupplemented water, as well as overland-flow water.

The dominant industry in the plan area is grazing, focusing on beef cattle and wool production. Irrigation is mostly associated with small-scale operations producing fodder for livestock. Opal mining and natural gas production also occur in the area.

There are two Ramsar-listed wetlands in the plan area and the rivers contribute to numerous lake systems in NSW. The catchments' waterholes and streams also have important cultural values for the Indigenous peoples of the region.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The final WRP was gazetted in 2003 and has been extended to remain in force until June 2019 unless replaced earlier. A review of the plan is underway. The ROP has been in place since 2006.
2. Does the plan include key assessments?	Yes	The key assessments undertaken to support WRP and ROP development were comprehensive. The assessments are explicitly linked to the WRP's outcomes.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The WRP does not identify any areas of overuse. The WRP uses modelling to establish maximum volumes for extraction to achieve end-of-system flow objectives in the plan area. The plan establishes flow objectives for a range of flow conditions to prevent seasonal stress.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes measurable outcomes, strategies and monitoring arrangements. Monitoring arrangements are also specified, but lack detail on how progress towards achieving plan outcomes will be measured.
5. Does the plan facilitate trade?	Yes	Trading has been facilitated through the establishment of tradeable water allocations separated from land for all supplemented and unsupplemented entitlements within the four catchments. Trading between established zones is not permitted to ensure environmental and third-party impacts of trade are minimised.
6. Is interception appropriately considered and integrated into the plan?	Yes	Interception from the harvesting of overland flows is managed through licensing arrangements under the WRP. Water use for stock and domestic purposes was assessed as not posing a risk to the water resource.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	Connectivity between surface water and groundwater was considered in the development of the WRP. The area also contains limited groundwater in alluvial aquifers, which has been assessed as insignificant. Streamflow losses to groundwater have been allowed for in surface flow modelling.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Two of the four catchments are in near-pristine condition and the WRP preserves 99 per cent of pre-development end-of-system flows. A high proportion of pre-development flows are also preserved in the other two catchments. Conditions are placed on the timing of water extractions, although there are no requirements for environmental releases from the Cunnamulla Water Supply Scheme. The plan also grants unallocated water to the Commonwealth Environmental Water Holder from the Warrego and Nebine catchments.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Detailed monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring is reported through WRP annual reports and the five-yearly Minister's report. More recently information from SEAP and the SRA has been reported in the Implementation Review Report to inform the plan's review, which is underway. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan deals with climate variability using hydrological modelling based on historical data. It does not include modelling of future climatic conditions, but the plan has limited extractions to a low proportion of mean annual flows. Short-term extremes and climate variability are dealt with through water sharing rules.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP involved extensive engagement with a wide cross-section of the community and included community meetings and submissions on the draft plan. Public feedback was provided on how submissions were addressed in finalising the plans through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The Implementation Review Report indicates that most plan outcomes have been achieved. While the 2012–13 annual report indicates that water resource development was not a significant threat to the health of aquatic ecosystems, the Implementation Review Report notes challenges in the achievement of some environmental outcomes in the Warrego catchment. The plan is Queensland's nominated pilot for the Murray–Darling Basin Plan accreditation process.

WET TROPICS WATER RESOURCE PLAN 2013



Context

The Wet Tropics WRP area covers seven surface water catchments, including the Daintree River catchment to the north and the Herbert River to the south. The plan also manages the existing Mossman and Cairns Coast subartesian groundwater areas and introduces provisions for six new groundwater areas.

The only major water storage in the plan area is Koombooloomba Dam in the headwaters of the Tully River, which stores and releases water for power generation. In addition to hydropower, non-consumptive uses include tourism as well as recreational and commercial fishing. Consumptive water uses include town water supplies, irrigated agriculture and associated industries (such as sugar cane processing) and stock and domestic. The plan provides for existing and future uses, such as mining and industry, and includes specific reserves for future Indigenous economic development.

The plan area includes World Heritage and other conservation areas including the Daintree Rainforest. All of the surface water catchments contribute freshwater flows to the Great Barrier Reef lagoon. To protect these high conservation value areas, the plan aims to maintain consumptive use to between 15 to 20 per cent of low flows.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The first WRP for this area was finalised in 2013. A draft ROP is under preparation.
2. Does the plan include key assessments?	Yes	The key assessments undertaken to support plan development were comprehensive. They included full community consultation. The outcomes of the key assessments and consultation process are explicitly linked to the plan's outcomes.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. Under the planning arrangements surface water flows are anticipated to be similar to pre-development flows. The plan provides for converting area-based entitlements into volumetric entitlements and sets surface water extraction limits, but the extraction limits for groundwater are less clear. Levels of entitlements in some systems may be approaching system limits.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes broad economic, environmental, social and cultural outcomes. It includes measurable flow objectives and specifies monitoring requirements in general terms. The plan lacks detail on the measurement of progress towards achievement of plan outcomes. More details may be specified in the ROP once it is available.
5. Does the plan facilitate trade?	To some extent	Trade will be facilitated by creation of volumetrically specified tradeable allocations for around 30 per cent of surface water entitlements, thereby providing for trading in more developed areas that are likely to demand additional water.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan does not manage interception. Although there was no volumetric estimation of the potential for overland flow interception, assessments done for the draft plan indicated there was little risk to the area's water resources through interception activities.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan manages groundwater where there are high levels of use or risk to either groundwater or surface water resources. The impacts of groundwater extractions on surface water are managed to some extent, but there is little information on the impacts of surface water extractions on groundwater.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan has rules-based environmental water arrangements that focus on minimising impacts to natural flows. While substantial gaps in knowledge exist, the water needs of several flow-dependent environmental assets have been identified and the plan seeks to manage risks to these assets. It is expected that further details will be included in the ROP.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	Monitoring and reporting arrangements are specified in the WRP and ROP and include a five-yearly reporting period. The WRP and ROP commenced in December 2013 – hence it is too early to assess this criterion. The WA 2000 has provisions for compliance and enforcement supported by the progressive introduction of metering of extractive use.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	Hydrological modelling for the draft plan included historical climate data over a 118-year period as well as future climate scenarios. Short-term extremes and climate variability will be dealt with through flow conditions on new licences, annual allocation decisions and critical water supply arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	The development of the WRP involved extensive stakeholder consultation through a community reference panel, a public submissions process and other public consultation.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The WRP includes provisions for monitoring and reporting of progress towards the achievement of plan outcomes, but plan-specific monitoring and reporting does not begin until the ROP is in place.

WHITSUNDAY WATER RESOURCE PLAN 2010



Context

The Whitsunday WRP includes the catchments of the Proserpine and O'Connell which flow into Repulse Bay north of Mackay. Rainfall is predominantly seasonal with most falls occurring between December and May. The plan also manages groundwater throughout the plan area.

The WRP includes management of the Proserpine River Water Supply Scheme operated by Sun Water, as well as unsupplemented water and subartesian water. The supply scheme is supplied by water from the Peter Faust Dam on the Proserpine River.

Water planning is required to manage the intensive use of the resource, with some areas considered to be fully allocated. Water use is mainly for irrigated agriculture, domestic and industrial purposes. Non-consumptive uses include commercial and recreational fishing as well as tourism. The area has nationally important wetlands and the maintenance of ecosystems in Repulse Bay and the Great Barrier Reef is also partially dependent on flows from the catchment area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WRP was finalised in 2010 and the ROP in 2011. The ROP does not implement WRP provisions relating to unsupplemented water entitlements on the O'Connell and Andromache rivers at this stage.
2. Does the plan include key assessments?	To some extent	The plan was informed by key assessments to some extent, but significant gaps remained with regard to the environmental impacts of altered flow patterns.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan does not identify overuse, although the environmental report notes that some of the systems are under ecological stress in part due to the level of extractions. The plan provides for annual limits on extractions and defines the quantity of additional water available for allocation.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly identified outcomes and strategies intended to achieve these outcomes. Monitoring arrangements are also specified in the ROP and information collected must be used to assess the achievement of plan outcomes.
5. Does the plan facilitate trade?	To some extent	The WRP provides for tradeable water allocations separated from land. Tradeable allocations have not been created for unsupplemented entitlements in the O'Connell and Andromache rivers at this stage.
6. Is interception appropriately considered and integrated into the plan?	Yes	Management of overland-flow interception has been incorporated into the plan. No other significant interception activities were identified in the plan or related documents.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The treatment of water in the aquifer under the Proserpine River as water in the watercourse provides for effective conjunctive management of these resources, although the plan does not treat water in aquifers under other watercourses in the area in the same manner.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan includes an extensive set of environmental flow objectives. Releases from the dam must be made in a way that minimises environmental impacts, but there are no requirements to release water to protect environmental values.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Monitoring and reporting arrangements are specified in the WRP and ROP. Monitoring is reported in WRP and EFAP annual reports (e.g. flow, trade, water use, ecological), but results are not always reported against plan outcomes. It is unclear whether monitoring will enable an assessment of progress against all of the plan's ecological outcomes. The WA 2000 contains provisions for compliance and enforcement.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan is based on hydrological modelling using historical data. It does not include modelling of future climatic conditions but does contain strategies such as making provision for critical human water needs and preventing environmental releases from the Peter Faust Dam once storage is at critical levels.
11. Is stakeholder engagement in the planning process adequate?	Yes	Input from a wide cross-section of the community informed plan development and followed the usual path for extensive engagement with stakeholders, as specified in the Act. Public feedback was provided on how submissions were addressed in finalising the plan through publication of a consultation report.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The WRP annual reports note that progress is being made in implementing the ROP strategies, however there is not enough information to determine whether all plan outcomes are being achieved.

ARCHER, LOCKHART AND STEWART WILD RIVER DECLARATIONS 2009



Context

The Archer, Lockhart and Stewart basins are located on Cape York in Far North Queensland. They contain some of Australia's most intact river systems, wetlands and estuarine lakes, which in turn support many unique plants and animals.

The declarations are natural resource management plans that include water planning and regulation. The declarations manage surface water and groundwater considered to be highly connected to the major streams.

The primary aim of the declarations is to preserve the natural values of the river systems while allowing development activities to occur that do not threaten these values. Extractions for consumptive use are limited to less than one per cent of mean annual flows in each of the systems. The declarations provide water for Indigenous communities to achieve their social and economic aspirations.

The Queensland Government has announced its intention to revoke the Archer, Lockhart and Stewart basins Wild River declarations and replace the declarations with alternative arrangements. A draft statutory Cape York Regional Plan and a draft strategy for delivering water resource management in Cape York have been released for public consultation. A further WRP may be developed in the future to cover water sharing arrangements on Cape York Peninsula.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The Archer, Lockhart and Stewart basins were declared Wild River areas in April 2009. In November 2013 the Queensland Government published notices of intent to revoke the declarations and sought public comment on this proposal. A draft Cape York Regional Plan, to replace the Wild River declarations, was also released for public consultation at this time.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the declarations. Potential risks to the water resource, such as the taking of overland flows and groundwater, were considered.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The declarations do not identify any areas of overuse. Total water allocated or available for allocation amounts to less than half of one per cent of mean annual flow. Assessment for additional licences must have regard to the protection of the natural values.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The declarations include a generic set of environmental outcomes. In some cases a set of special features are specified to be included in the high preservation zone. They do not specify monitoring arrangements.
5. Does the plan facilitate trade?	No	The declarations do not facilitate water trading. Given the low level of consumptive use, the demand for trading is very low.
6. Is interception appropriately considered and integrated into the plan?	Yes	Interception through the take of overland flows was raised in submissions. Works for the capture of overland flow are regulated through the declarations. Given the low demand for the taking of overland flows, it was not considered necessary to require the take of overland flow water to be licensed or included in the unallocated water reserves. The take of overland flows is not permitted in high preservation areas unless for stock and domestic purposes.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The declarations manage subartesian groundwater extractions within the highly connected high preservation zones by including extractions in the overall allocation limit. Other subartesian groundwater is not managed given a weaker connection with the major streams. Artesian water in the Great Artesian Basin (GAB) is managed through the GAB WRP.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The declarations contain provisions to preserve the natural values of the basins through limiting water extractions and development activities that may erode these values.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	No monitoring reports are due to date. Monitoring of development activity is based on licensing requirements, satellite imagery and through the Indigenous Land and Sea Rangers program. Compliance and enforcement is dealt with through reference to relevant Acts, including the WA 2000.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The declarations deal with climate variability and change through preserving the natural flows of the system. Given the adoption of a precautionary approach, climate change is not expected to have a major impact on the allocation of water.
11. Is stakeholder engagement in the planning process adequate?	Yes	The Wild Rivers Act requires extensive consultation to be undertaken before declaration of a Wild River area. Extensive engagement occurred at key stages of the Archer, Lockhart and Stewart basin declaration processes with traditional owners and other stakeholders. Public feedback was provided on how submissions were addressed in finalising the declarations through publication of a consultation report. Submissions have been invited on the notice of intent to revoke the declarations, and on the draft Cape York Regional Plan and the draft strategy for delivering water resource management in Cape York.
12. Have identified outcomes been achieved during the reporting period?	Unable to assess	Under the <i>Wild Rivers Act 2005</i> , the first wild rivers report is due by 2014, five years after the declaration. Should the Minister revoke the declarations, this review will not occur.

FRASER AND HINCHINBROOK WILD RIVER DECLARATIONS 2007



Context

Fraser Island is located off Queensland's south coast near the regional towns of Hervey Bay and Maryborough. The climate is subtropical, with rainfall mostly occurring between December and April and a mean annual rainfall of more than 1200 mm. Hinchinbrook Island is located off the north coast near the regional towns of Cardwell and Ingham. Situated in the wet tropics, the climate is wet and humid all year round, with an average annual rainfall of more than 2000 mm.

The declarations are natural resource management plans that include water planning and regulation. The wild river declarations manage unsupplemented water on both islands. Subartesian groundwater is also managed on Fraser Island, and overland flow harvesting is managed on Hinchinbrook Island.

National park reserves cover almost all the land on these two islands, with the main industries focusing on tourism and fishing. The islands are both listed World Heritage Areas and include Ramsar-listed wetland systems.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	Fraser and Hinchinbrook Islands were declared Wild River areas in 2007. The declarations continue in effect unless revoked by parliament.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the declaration. Consideration of potential risks to the water resource is implicit in the development restrictions.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The declarations do not identify any areas of overuse. The Fraser declaration establishes an annual extraction limit that represents a very small proportion of mean annual flows. The Hinchinbrook declaration prevents any increase in allocations for consumptive use. It also manages overland flow harvesting.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Both declarations contain explicit management strategies and the objectives of the declarations are implicitly those of the Wild Rivers legislation. Reporting arrangements are detailed in the Wild Rivers Act. The declarations do not specify monitoring requirements.
5. Does the plan facilitate trade?	No	The declarations do not facilitate water trading. Given the low level of consumptive use, the demand for trading is very low.
6. Is interception appropriately considered and integrated into the plan?	Yes	The Fraser declaration provides a limit on extractions for stock and domestic purposes and the Hinchinbrook declaration manages the taking of overland flow water for stock and domestic purposes. Other forms of interception are managed through separate legislative planning instruments and it is implicit that these activities are unlikely to occur within the national park areas.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The Fraser declaration recognises the highly connected nature of the groundwater and surface water systems and includes management arrangements for both resources. The Hinchinbrook declaration does not manage groundwater and surface water interactions because there is little evidence of groundwater-dependent flows.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The declarations contain provisions to preserve the natural values of the basins through limiting water extractions and development activities that may erode these values.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	No monitoring reports are due to date. Compliance and enforcement is dealt with through reference to relevant Acts, including the WA 2000.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The declarations deal with climate variability and change through preserving the natural flows of the system. Given the adoption of a precautionary approach, climate change is not expected to have a major impact on the allocation of water.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Declaration proposals for the Hinchinbrook and Fraser Island Wild River areas were published for consultation purposes and submissions were sought. No information was available on the submissions received or how these were considered.
12. Have identified outcomes been achieved during the reporting period?	Unable to assess	Under the <i>Wild Rivers Act 2005</i> , the first wild rivers report was due in 2012, five years after the declaration. No information on this report was available.

WENLOCK BASIN

WILD RIVER DECLARATION 2010



Context

This declaration includes almost all of the Wenlock Basin, located on Cape York in Far North Queensland. The river system flows from the Great Dividing Range into the Gulf of Carpentaria. The climate in the area is monsoonal with high flows and extensive flooding in the river system during the wet season and much reduced or intermittent flows for the rest of the year.

The declaration is a natural resource management plan that includes water planning and regulation. The declaration manages surface water and groundwater considered to be highly connected to the major streams.

The declaration's primary aim is to preserve the natural values of the river system while allowing development activities to occur that do not threaten these values. The major development activity in the area is a pre-existing bauxite mine operated by Rio Tinto. The declaration provides water for Indigenous communities to achieve their social and economic aspirations.

The Queensland Government has announced its intention to replace the Wenlock Basin Wild River declaration with a statutory Cape York Regional Plan and manage water resources on Cape York through the development of a draft strategy for delivering water resource management in Cape York.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The Wenlock Basin was declared a Wild River area in 2010. In November 2013 the Queensland Government published a notice of intent to revoke the declaration and sought public comment on this proposal.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken to support the declaration. Consideration of potential risks to the water resource is implicit in the development restrictions.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The declaration does not identify any areas of overuse. Total water allocated or available for allocation exceeds the usual one per cent limit adopted for Wild Rivers, given the demand for water to support existing mining operations. The total volume available for extraction amounts to less than three per cent of mean annual flow.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The declaration includes a generic set of environmental outcomes and identifies Coolibah Springs as a special feature to be included in the high preservation zone. It does not specify monitoring arrangements.
5. Does the plan facilitate trade?	No	The declaration does not facilitate water trading. Apart from water use for mining, the level of consumptive use is very low and thus the level of demand for trading is also very low.
6. Is interception appropriately considered and integrated into the plan?	Yes	The only significant interception activity is mining, which is authorised under a Special Agreement Act. In declaring the Wild River area, the volume of the water entitlement to support mining operations was substantially reduced. Given the low demand for the take of overland flows, this was considered a low risk. The construction of dams requires a permit.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The declaration manages subartesian groundwater extractions conjunctively with surface water within the high preservation zone, where connectivity is assumed to be high. Other subartesian groundwater is not managed given a weaker connection with the major streams. Artesian water in the Great Artesian Basin (GAB) is managed through the GAB WRP.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The declaration specifies the natural values of the area and contains provisions to preserve these values through limiting water extractions and development activities that may erode these values.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	No monitoring reports are due to date. Monitoring of development activity is based on licensing requirements, satellite imagery and through the Indigenous Land and Sea Rangers program. Compliance and enforcement is dealt with through reference to other relevant Acts, including the WA 2000.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The declaration deals with climate variability and change through preserving the natural flows and variability of the system. Given the adoption of a precautionary approach, climate change is not expected to have a major impact on the allocation of water.
11. Is stakeholder engagement in the planning process adequate?	Yes	Extensive engagement occurred at key stages of the Wenlock Basin declaration process with traditional owners and other stakeholders. Public feedback was provided on how submissions were addressed in finalising the declarations, through publication of a consultation report. Submissions have been invited on the notice of intent to revoke the declarations, and on the draft regional plan and the draft strategy for delivering water resource management in Cape York.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	Under the <i>Wild Rivers Act 2005</i> , the first wild rivers report is due by 2015, five years after the declaration. Should the Minister revoke the declaration, this review will not occur.

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6 South Australia

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The context of water planning in South Australia

Water planning in South Australia aims to manage the state's scarce highly developed water resources. Water allocation plans (WAPs) seek to provide for the equitable allocation and use of water between environmental, social and economic needs and set a rate of water extraction that is sustainable.

Almost all of South Australia's potable water resources are in the southern third of the state. The River Murray is the major surface water resource: it represents around 30 per cent of the state's harvestable water resources and provides a significant proportion of irrigation and urban and regional reticulated water supply from the state's Murray–Darling Basin (MDB) entitlement. The groundwater resources of the south-east are the largest in the state's agricultural areas. Most other water is sourced from the developed groundwater resources found across South Australia and the captured and stored surface water within the Mount Lofty Ranges. The ancient resource of the Great Artesian Basin (GAB) and ephemeral flows of the Lake Eyre Basin occur in the arid north and north-east of the state.

South Australia is the driest of the Australian states and territories. Many of the state's relatively limited resources are highly sensitive to small changes in rainfall run-off and recharge, likely to be exacerbated under climate change projections for lower average but higher intensity rainfall events. Others are large, often ancient groundwater resources with very slow, if any, response to rainfall. Scarcity, coupled with projected increased demand driven by a drier climate, pose significant challenges for water management in South Australia. Water-affecting land use change and growth in numbers of farm dams in peri-urban areas of the Mount Lofty Ranges, Barossa and Clare are also having a significant impact on the sustainability of current water extraction regimes.

Strategic water demand planning

The South Australian 2009 Water for Good plan projects water supply and demand to 2050 for the Adelaide metropolitan region, and actions to meet this demand. Regional Demand and Supply Statements are being developed providing a long-term (40-year) overview of water supply and demand for each of South Australia's eight natural resources management (NRM) regions. Each statement outlines the status and condition of water resources in the region, demands on these water resources and timeframes for future demand/supply gaps. The South Australian urban and regional water and wastewater utility, SA Water, develops long-term strategic water security plans setting out proposals for additions to and augmentation of its treated reticulated water supply and wastewater services networks to respond to future demand.

Water allocation planning

Where a water resource needs close management (in response to increased resource development pressures and/or community concern) it is prescribed under the *Natural Resources Management Act 2004* (NRM Act 2004). Prescription of a resource triggers a series of actions leading to the regulation of water extraction through a licensing regime and the development and implementation of a WAP that establishes the overall water extraction and management regime for the resource. Statutory WAPs lie within a statewide NRM hierarchy which also includes:

- an overarching state Natural Resources Management Plan that sets out a long-term vision for NRM in South Australia and interacts with the state planning strategy for land use and development
- statutory regional NRM plans – these are prepared by the eight regional NRM boards and include information, goals and strategies for integrated management of water and other natural resources for their particular region.

Once made, WAPs are taken to be part of the relevant regional NRM plan. Provisions of WAPs include:

- setting of consumptive pools and extraction limits for each resource
- determination of entitlements and allocations via a licensing regime
- rules for the transfer of water allocations and licences
- environmental water provision and management
- requirements for the granting of permits and approvals for relevant water-affecting activities, and
- monitoring and reporting requirements.

Regional NRM boards are responsible for plan development while the Department of Environment, Water and Natural Resources (DEWNR) is responsible for plan implementation via a licensing regime.

Water resources outside prescribed areas are managed under the relevant water-affecting activity requirements of the NRM Act 2004 and in accordance with water-resource-related provisions of the regional statutory NRM plans.

Recent planning changes

Recent changes to the NRM Act 2004 require a WAP to be amended at least once in any 10-year period following adoption. Previously this was five years. Once reviewed, a regional NRM board can then choose to amend the plan or continue with the same plan for up to a further 10 years.

The following plan areas were assessed as part of the 2011 report card but have not been included in this report card because they have been merged into other planning areas:

- Water Allocation Plan for the Angas Bremer Prescribed Wells Area
- Water Allocation Plan for the Comaum-Caroline Prescribed Wells Area
- Water Allocation Plan for the Lacepede Kongorong Prescribed Wells Area
- Water Allocation Plan for the Naracoorte Ranges Prescribed Wells Area.

Where new planning areas have subsumed previously assessed areas, it will be noted in criterion 1 of the assessment for the new plan.

Murray–Darling Basin Plan

The Murray–Darling Basin Plan was adopted in November 2012 and is relevant to several water resources in South Australia. The Basin plan has reviewed the cap limits and set sustainable diversion limits (SDLs) that reflect extraction levels considered sustainable in the long term for both surface water and groundwater. Water plans applicable to areas in the MDB will be revised in light of the new water resource plan requirements for accreditation under the Basin plan. Most provisions of the Basin plan do not take effect for several years, such as the SDLs which take effect in 2019, but some may influence water planning and management in the shorter term (e.g. environmental water delivery). Where these actions are relevant in 2013, they have been identified at the individual plan level.

Table 4: Summary of planning instruments in South Australia

Assessment criteria	NRM Act	State policy	NRM plans	WAP	Comment
1. Status of plan	yes		yes	yes	WAPs are developed for prescribed water resources. Non-prescribed resources are managed under provisions of the relevant NRM plan and NRM Act 2004.
2. Key assessments	yes	yes	yes	yes	Assessments are generally undertaken at the proposed plan area level, with further details on water sources, supply and demand also provided in overarching NRM plans, and Regional Demand and Supply Statements. Assessment of environmental, social and economic values is guided by a statewide risk framework.
3. Overuse status and pathways to sustainable water extraction	yes	yes		yes	WAPs set a limit on the volume of water available to be taken for licensed consumptive purposes and provide for environmental flows and/or protect groundwater levels and quality. Recovery pathways are set out in WAPs (where relevant).
4. Clearly identified and measurable outcomes	yes	yes	yes	yes	The NRM Act 2004 sets statewide NRM outcomes, and each regional NRM plan and WAP include plan objectives, and detail strategies to achieve these objectives. Statewide monitoring, evaluation, reporting and improvement (MERI) guidelines for WAPs guide the development and review of plan objectives.
5. Facilitation of trade	yes	yes		yes	The NRM Act 2004 enables the creation of tradeable water access entitlements. WAPs detail the specific transfer rules and criteria for each water source within the plan area.
6. Integration of water intercepting activities	yes	yes	yes	yes	Interception activities are generally controlled under WAPs, via entitlement and/or incorporation into extraction limits and through development permits and approvals. Plantation forestry is regulated by statewide policy which is being progressively integrated into the entitlement framework.
7. Surface water/ groundwater connectivity			yes	yes	Where significant surface water resources exist, they are generally incorporated in a single plan covering both surface water and groundwater (with the exception of River Murray and Morambro Creek prescribed watercourses). WAPs include assessment of the impact on other water resources.
8. Environmental water management arrangements	yes		yes	yes	The NRM Act 2004 outlines overarching requirements for environmental water needs. Individual NRM plans and WAPs specify statutory environmental water provisions.
9. Monitoring, compliance and enforcement provisions	yes	yes	yes	yes	Resource-specific monitoring provisions are detailed in individual WAPs; statewide MERI guidelines for WAPs guide the development and review of plan objectives. DEWNR undertakes compliance and enforcement as required under the NRM Act 2004.
10. Planning for climate change and extremes in inflows or recharge	yes	yes	yes	yes	WAPs include provisions to deal with variability. WAPs can be amended in response to extreme events. Climate change impacts are noted in WAPs; regional risk assessments are being conducted in accordance with statewide policy framework.
11. Stakeholder engagement	yes		yes	yes	The NRM Act 2004 requires public consultation on the intent to prescribe (pre-development) and draft WAP stages. NRM boards manage WAP development and consultation.
12. Extent to which outcomes have been achieved	yes		yes	yes	The NRM Act 2004 requires review of WAPs every 10 years, and subsequent amendment (if necessary). Annual water resource status reports are being prepared by DEWNR for each resource.

Key findings

This section provides updated commentary on the previous report card assessment for South Australia (key findings summarised below) and includes information on significant findings for 2013. Recognition of ongoing progress to address overallocation and overuse is included in criterion 3 of the findings against criteria section.

Previous findings

- *Significant progress in addressing overallocation and overuse has been achieved through detailed resource assessments and stakeholder negotiation*
- *The integrity of water access entitlements is improving through the integration of interception activities and surface water/groundwater connectivity*
- *Long plan development and amendment periods are resulting in incidences of ongoing decline in resource condition*
- *The management of risks and the assessment of plan outcomes is undermined by limited evaluation and reporting of monitoring and the lack of systematic and transparent review process*

2013 findings

Implementation of new planning arrangements for plantation forestry

South Australia is implementing clearly defined, secure and tradeable water licences for plantation forestry. These arrangements integrate forestry water use into the water planning framework and allow trade between forestry and other industries, thereby allowing water to move to its highest-value use. The new water plan for the Lower Limestone Coast in the state's south-east has now put these arrangements into practice and forest water licences will be issued across 2014. This progress has been underpinned by significant advances in the scientific understanding of plantation forestry water use, which has also improved the accuracy of accounting for water use by forestry.

SA

There continue to be long delays with plan development and reviews

The development and review of some water plans has fallen behind scheduled timelines. This may affect certainty for water entitlement holders and result in a lack of, or outdated, planning arrangements remaining in place long after a need for revised arrangements has been identified. To make the operation of the NRM Act 2004 more effective and efficient, South Australia has recently amended the Act to extend the review cycle from five-yearly to 10-yearly and removed the need for concept statements in developing plans. Building on this legislative reform, South Australia is starting development of a five-year forward work program for water allocation planning activities, using a risk-based approach.

Lack of clear links between water plan objectives and subsequent monitoring and reporting

Many older plans, as well as more recent second- and third-generation water plans, generally do not identify a clear set of goals for the plan as a whole to guide the overarching logic for the multiple water plan objectives and the evaluation of progress towards each one. This lack of a clear hierarchy to delineate between the different and overlapping objectives reduces the effectiveness of monitoring arrangements and reporting of plan effectiveness. The most recent first-generation water plans appear to have benefited from the statewide MERI guidelines for WAPs and reflect a clear overarching goal for the plan as a whole, supported by monitoring and evaluation provisions. Social and economic objectives are generally not well articulated in water plans, despite extensive community consultation during plan development that suggests these values are a major consideration.

Lack of transparency with water plan review processes and the evaluation of progress towards water plan objectives

Although plan development timeframes continue to be drawn out they do accommodate extensive community consultation. There does remain an absence of structured risk assessment to inform trade-offs. Furthermore, the process for assessing progress towards plan objectives remains variable and is not consistently transparent.

Findings against 12 criteria

1. Status of water planning	Under the NRM Act 2004, WAPs are perpetual and reviewed every 10 years. At present there are 19 WAPs in operation covering 22 of the 27 prescribed water resources in South Australia. One plan is being developed for two of the remaining five prescribed resources. The other three prescribed resources are awaiting decisions on future management. The review schedule for existing plans is being revised to reflect the new review periods in the NRM Act 2004. The six plans in the SA Murray–Darling Basin NRM region are to be reviewed in light of the Basin plan. Some areas are being considered for joint plans to simplify management arrangements. South Australia is developing a risk-assessment process for prioritising plan development.
2. Do plans include key assessments?	Resource assessments are prepared as part of the water allocation planning process, with minimum requirements specified under the NRM Act 2004. The Act requires plans to include an assessment of the resource's capacity to meet demand, the potential effect of the plan on other water resources, and the quantity, quality and timing of water needed by water-dependent ecosystems. A new principle-based risk-management policy provides a more transparent assessment of environmental risks, although trade-off decisions could be made more transparent by making supporting information publicly available. Assessment of social and economic values is often only qualitative.
3. Do plans prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	WAPs aim to prevent overuse through setting of extraction limits based on hydrological and environmental assessments of resource capacity, a community based trade-off process, and the inclusion of resource condition triggers to limit extraction where monitoring indicates resource stress. Monitoring and resource assessments indicate that some early WAPs did not prevent or address persistent overuse. Newly developed plans and recently amended plans set pathways to sustainable extraction through immediate or scheduled licensed allocation reductions and measures to mitigate impacts of overuse. Ongoing delays in amending some plans, along with the time taken to convert to volumetric-based licenses, are resulting in continued overallocation in some areas.
4. Do plans include clearly identified and measurable outcomes?	General and specific water management objectives are set under WAPs, although these are not always underpinned by measurable performance indicators. The NRM Act 2004 and state and regional NRM plans contain overarching longer-term sustainability objectives. Statewide MERI guidelines for WAPs guide monitoring activities leading to the evaluation of plan objectives, although only newer plans have put this policy into effect.
5. Do plans facilitate trade?	WAPs clearly facilitate trade, detailing transfer objectives and criteria to support the trade and transfer of licences provisioned under the NRM Act 2004. Localised restrictions are detailed in WAPs and are generally applied to mitigate environmental and/or third-party impacts, or in recognition of hydrological limitations. The conversion of area-based to volumetric-based licenses is clarifying entitlement specification. The total volume of entitlement trade in 2012–13 was 65 GL, with an estimated market turnover (gross value) of \$56 million. The total volume of water allocation trade in 2012–13 was 318 GL (including trades in, out and within the state), with an estimated turnover of \$15 million.
6. Is interception appropriately considered and integrated into plans?	Assessment of the risks to resources of relevant interception activities is undertaken in WAP development. Sustainable extraction limits set under WAPs account for current and projected volumetric impacts of interception activities. In prescribed surface water areas, farm dam development is subject to management zone capacity and density limits and consumptive use requirements. Extraction from stock and domestic bores is licensed in some areas of high demand. Amendments to the NRM Act 2004 have formalised statewide policy to integrate interception by plantation forests into water management frameworks. The WAPs for the Eastern and Western Mount Lofty Ranges identify commercial forestry as an activity requiring a permit. The Lower Limestone Coast WAP identifies commercial forests within that area (with the exception of farm forestry) as being appropriate to bring within the forest water licensing system in the NRM Act 2004. At present commercial forests in the Lower Limestone Coast Prescribed Wells Area (PWA) are managed through the referral system that operates under the <i>Development Act 1993</i> .
7. Do plans include/address GW/SW connectivity as appropriate?	Connectivity is considered in resource assessments and addressed in WAPs where relevant. Recognition of potential impact is considered in setting extraction limits. Management approaches include setback limits for groundwater extractions near watercourses, and consideration of groundwater-sourced baseflow in surface water systems when calculating groundwater extraction limits.

8. Do plans contain accountable environmental water management arrangements?	The NRM Act 2004 requires WAPs to take the needs of the environment into account when determining the quantity of water available for consumptive use. WAPs identify environmental water requirements and set out the principles and rules that allocate water between consumptive users and the environment. Environmental water provisions are typically specified in plans by the setting of extraction limits and conditions, and rules to protect minimum flows at specified times. Monitoring and evaluation of the effectiveness of these arrangements is not clearly specified or routinely undertaken. The determination, provision and monitoring of environmental water is more sophisticated in newer plans.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Resource monitoring requirements are specified under WAPs, although reporting and evaluation is inconsistent. There is little evidence of ecosystem health monitoring to align with plan outcomes. The NRM Act 2004 specifies that the review of WAPs is to occur at least every 10 years, but it does not specify the review criteria. Annual groundwater and surface water status reports have been published in recent years for each plan area. Compliance orders for breaches of relevant legislation and WAP provisions are specified under the NRM Act 2004.
10. Do plans deal appropriately with climate change and extremes in inflows or recharge?	WAPs typically include provisions to manage the impact of periods of low inflow or recharge, but to date have not incorporated potential climate change impacts in a substantive way. Regional assessments of climate change impacts on water resources are underway. The 10-yearly reviews of WAPs provide an adaptive management opportunity to deal with climate change impacts.
11. Is stakeholder engagement in the planning process adequate?	WAPs are developed through a comprehensive program of stakeholder consultation and engagement. Engagement continues from plan pre-development through to plan finalisation and review, usually beyond the requirements of the NRM Act 2004. Stakeholder views are typically responded to and the trade-offs made between competing demands are embedded in WAP provisions, although these are not routinely transparently explained. Engagement with Indigenous groups to determine Indigenous values is an emerging area.
12. To what extent have identified outcomes been achieved during the reporting period?	Most first-generation WAPs developed in the early 2000s had limited success in meeting their overarching objective to keep extraction within sustainable limits, primarily due to heavy extraction and unregulated land use change in some areas (particularly expansion of plantation forestry in the south-east and farm dam development), coupled with the extended period of low rainfall during the past decade. It is difficult to determine the extent to which the wider range of identified plan objectives are being achieved, as reporting of monitoring data is inconsistent and irregular. There is no systematic approach to plan review and there have been significant delays between review and subsequent amendment, where required – a particular concern in areas where resource stress persists. There has not yet been sufficient time to assess whether recently adopted plans fulfil their objectives.

Glossary and abbreviations

Term	Abbreviation	Definition
Annual Allowable Volume	AAV	
Department of Environment, Water and Natural Resources	DEWNR	Agency responsible for management of the state's water resources.
Environment Protection Agency	EPA	South Australia's environmental regulator, responsible for the protection of air and water quality, and the control of pollution, waste, noise and radiation.
Groundwater-dependent ecosystem	GDE	
Licensed purpose		Water use in a prescribed area that requires a water licence, e. g. irrigation, public water supply, industrial.
Monitoring, evaluation, reporting and improvement	MERI	
<i>Natural Resources Management Act 2004</i>	NRM Act	Sets legislative requirements for management of the state's natural resources, including water management.
Natural Resources Management board	NRM board	Statutory board responsible for land management, animal and pest plant control and water management. Responsible for the development of WAPs. There are eight NRM boards in South Australia.
Non-licensed purpose		Water use that does not require a water licence, e. g. stock and domestic use, plantation forestry.
Prescribed area		A surface water area, watercourse, lake and/or well declared to be prescribed in accordance with Section 125 of the NRM Act 2004; may include a prescribed water resources area, surface water prescribed area, prescribed watercourse or prescribed wells area.
Permissible Annual Volume	PAV	
Prescribed water resources area	PWRA	
Prescribed wells area	PWA	
SA Water		South Australian Water Corporation
Sustainable diversion limit	SDL	The maximum long-term annual average quantities of water that can be taken on a sustainable basis from Basin water resources.
Water access entitlement		An entitlement to gain access to a share of the consumptive pool to which a licence relates (currently only available for the River Murray Prescribed Watercourse).
Water-affecting activity		Activity that requires a permit or approval as determined by a NRM plan or a WAP, e. g. drilling a well, constructing a dam, excavating a watercourse.
Water Resources Plan	WRP	Water resource planning instrument under the Murray–Darling Basin Plan.

Planning areas

South Australia



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2. Water Allocation Plan for the Clare Valley Prescribed Water Resources Area	348
3. Water Allocation Plan for the Eastern Mount Lofty Prescribed Water Resources Area	350
4. Water Allocation Plan for the Far North Prescribed Wells Area	352
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6. Water Allocation Plan for the Mallee Prescribed Wells Area	357
7. Water Allocation Plan for the Marne Saunders Prescribed Water Resources Area	359
8. Water Allocation Plan for the McLaren Vale Prescribed Wells Area	361
9. Water Allocation Plan for the Morambro Creek and Nyroca Channel Prescribed Watercourses including Cockatoo Lake and the Prescribed Surface Water Area	363
10. Water Allocation Plan for the Musgrave Prescribed Wells Area	365
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12. Water Allocation Plan for the Northern Adelaide Plains Prescribed Wells Area	369
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19. Water Allocation Plan for the Western Mount Lofty Ranges Prescribed Water Resources Area	383

BAROSSA PRESCRIBED WATER RESOURCES AREA WATER ALLOCATION PLAN



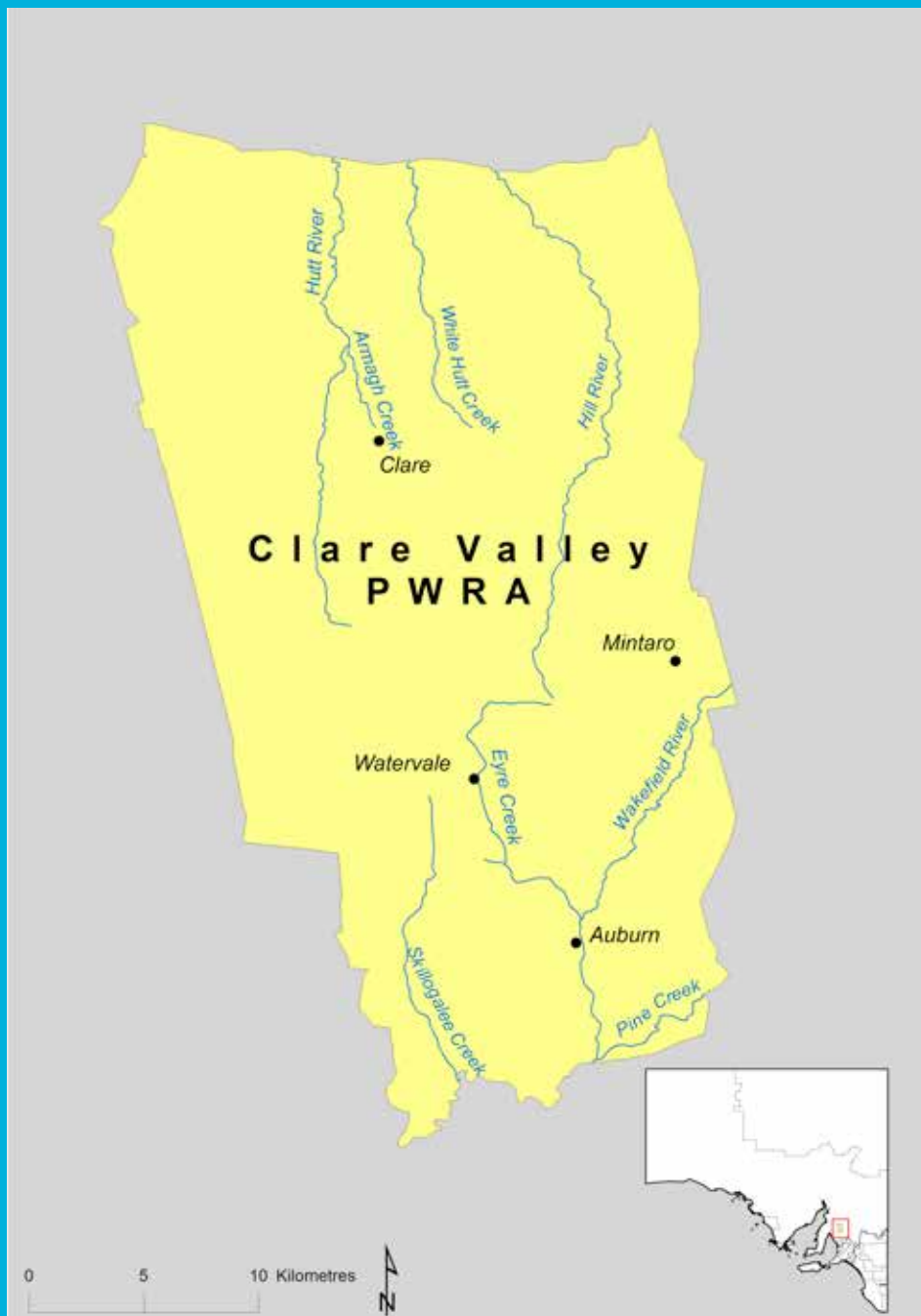
Context

The Barossa Prescribed Water Resources Area (PWRA), centred 60 km north-east of Adelaide, includes the surface water, watercourses and sedimentary and fractured rock aquifers that occur in the area. Most surface water run-off and groundwater recharge occurs in the upper reaches of the area, predominantly driven by winter rainfall. All resources are highly developed, with most extraction sourced from underground water and surface water run-off stored in farm dams. An increasing volume of water used for irrigation is imported from the Murray River. Consumptive water use includes irrigation (primarily wine grapes), industry and stock and domestic uses. Protecting the fully allocated resources from overuse and mitigating third-party impacts of extraction and use are the key management drivers for the area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This second-generation plan was adopted in June 2009 and is scheduled for review in 2014.
2. Does the plan include key assessments?	To some extent	All key assessments were conducted during plan preparation, although there is limited information on the quantity of surface water interception. Assessment of the community and economic value of water in the area is limited.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not comprehensively prevent overuse. Some areas of surface water and watercourse resource stress and historical declining groundwater levels are identified in the plan, coupled with increasing demand. The plan sets the extraction limit at the current estimated level of extraction while further information on current allocation volumes is obtained following volumetric conversion of licences under the plan.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Allocation, transfer and permit objectives are set, underpinned by operating principles, actions and monitoring arrangements. Measurement of progress is hindered by a lack of clear performance indicators and provisions for ecosystem monitoring.
5. Does the plan facilitate trade?	Yes	Trade can occur in accordance with provisions in the plan and legislation. Barriers to trade are justified to protect other users and/or environmental flows. Creation of tradeable volumetric allocations in the PWRA allows for expanded trading options across the area.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Water captured by farm dams is accounted for in the development of management zone capacity limits. The current level of dam capacity across the PWRA is at the limits set under the plan. It is noted that there is limited information on the quantity of current surface water interception.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan addresses significant connectivity found across the PWRA by setting extraction and well density limits and buffer zones for well construction near watercourses. Connections are highly ecologically significant, particularly in maintaining watercourse baseflows and permanent pools in low-flow periods. The ongoing potential for overuse in the PWRA presents a particular threat to ecosystems dependent on resource connectivity.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan sets out objectives and explicit environmental flow requirements for surface water and watercourses. These flow requirements are to be met through a range of measures including extraction limits and controls on the development of water-affecting activities. Environmental health monitoring appears limited.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out under the plan. The first annual groundwater status report demonstrates extensive groundwater monitoring, but the adequacy of surface water monitoring is difficult to assess given the limited reporting of monitoring under the previous plan. Improvement to water-dependent ecosystem monitoring is identified in the plan. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan has been developed with consideration of the risk to the environment and other users from periods of low rainfall, inflow and recharge and includes measures to manage these risks. The plan notes further monitoring and resource assessment is required to better estimate and account for climate change and variability impacts.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive engagement with stakeholders throughout the planning process, in line with a detailed consultation plan. Indigenous values were not identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	A review of the current plan by the Adelaide and Mount Lofty Ranges NRM Board is scheduled in 2014. The review will examine the issues in the Barossa PWRA requiring consideration for development of the next WAP. The groundwater status reports (2011 and 2012) indicate identified gradual adverse groundwater trends present a low risk to the resource in the medium term.

CLARE VALLEY PRESCRIBED WATER RESOURCES AREA WATER ALLOCATION PLAN



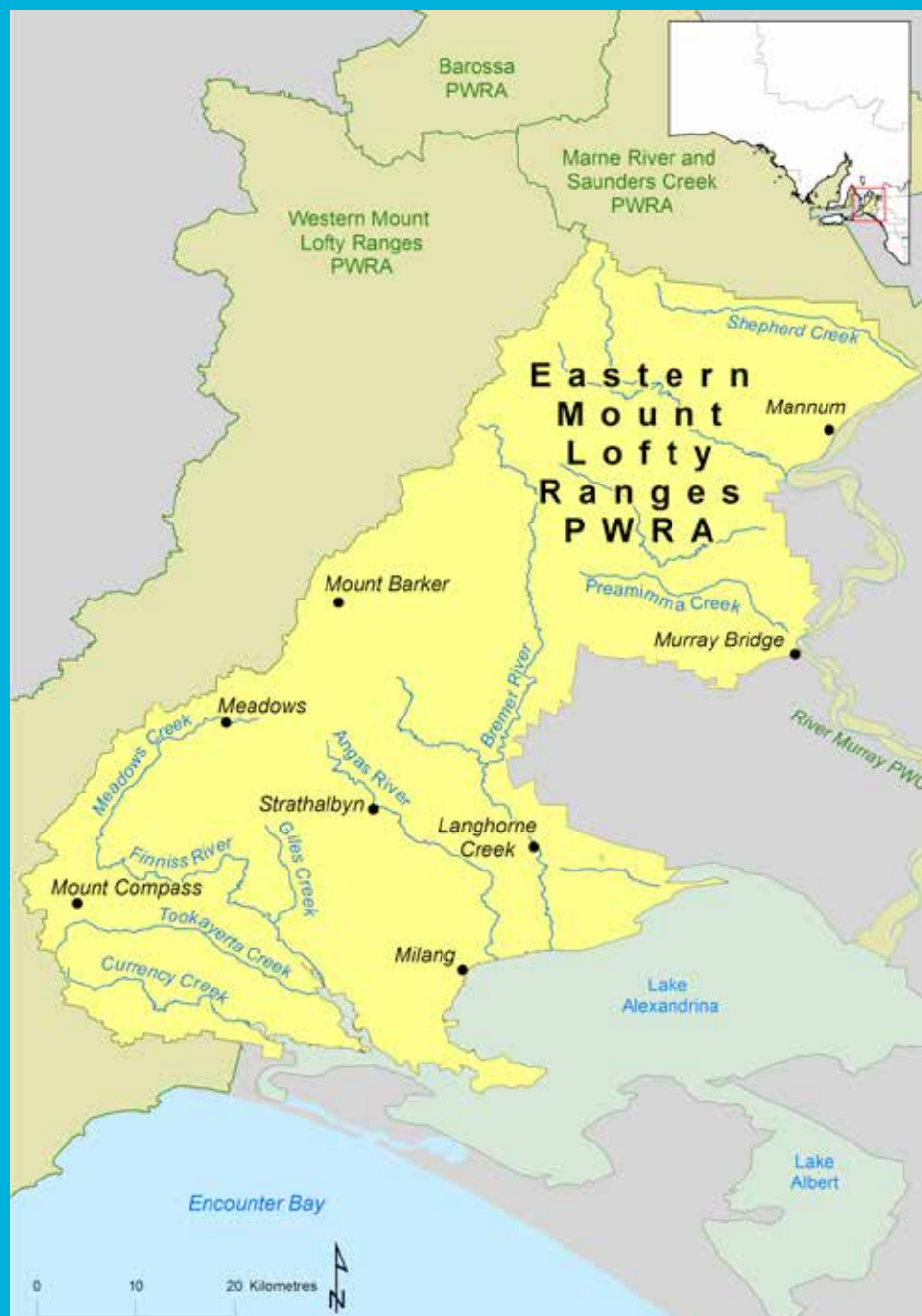
Context

The Clare Valley PWRA, centred 100 km north of Adelaide, includes the surface water, watercourses and sedimentary and fractured rock aquifers that occur in the area. Most surface water run-off and groundwater recharge is driven by winter rainfall. Most watercourses are ephemeral. All resources are highly developed, with the majority of extraction sourced from underground water and captured and stored surface water run-off. Consumptive water use includes irrigation (primarily wine grapes), industry and stock and domestic uses. Protecting the fully allocated resources from recurrent overuse and mitigating the third-party impacts of extraction and use are the area's key management drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The second-generation plan was adopted in May 2009. The plan needs to be reviewed within 10 years of adoption.
2. Does the plan include key assessments?	Yes	All key assessments were conducted during plan preparation. The assessment of social and economic value is qualitative only.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan notes some areas of surface water and watercourse resource stress and past over-extraction of groundwater. Most management zones were overallocated. The plan sets new extraction limits at five per cent less than previous limits. There remains considerable scientific uncertainty around the sustainable extraction limit for the fractured rock aquifers and ephemeral streams in this area.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Allocation, transfer and permit objectives are set, underpinned by operating principles, actions and monitoring arrangements. Measurement of progress is hindered by the lack of clear performance indicators.
5. Does the plan facilitate trade?	To some extent	Trade can occur under the plan, and in accordance with the NRM Act 2004. Barriers to trade exist in the plan, with most justified to protect other users and/or environmental flows. Restricting trade to the extracted part only of surface water and watercourse allocations may inhibit flexibility in the local market.
6. Is interception appropriately considered and integrated into the plan?	Yes	Water captured by farm dams is accounted for in the development of management zone and sub-zone capacity limits. The current level of dam capacity across the PWRA is at the capacity limits set under the plan. Bypassing of specified low flows from licensed dams is required. Stock and domestic groundwater extractions are relatively low.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan accounts for strong and ecologically important surface water, watercourse and underground water resource connectivity by setting volumetric extraction and bore density limits and setback distances between wells and for wells near permanent pools or flowing streams.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental health targets are identified. The plan sets out explicit environmental flow requirements for surface water and watercourses. These flow requirements are to be met through a range of measures including volumetric extraction limits, bypassing of flows from dams in low-flow conditions and controls on the development of water-affecting activities.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	A detailed resource monitoring framework is set out under the plan, although an ecosystem monitoring program is not detailed. The first groundwater status report has been released and the equivalent Surface Water Status Report was released in 2012. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan has been developed with consideration of the risk to the environment and other users from periods of low rainfall, inflow and recharge and includes measures to manage these risks. The climate change risks are noted in the plan but further work is required to quantify the impact.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive engagement with stakeholders, in line with the requirements under the NRM Act 2004 and a detailed consultation plan. Indigenous values were not identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	No explicit assessment of plan objectives has been conducted. Resource reports do indicate the overarching resource sustainability objectives of the first-generation plan were not comprehensively achieved, with areas of persistent resource stress. The plan, adopted in May 2009, requires allocation reductions and more rigorous resource development regulation to meet resource sustainability objectives. The most recent groundwater status report indicates that groundwater resources are now at low risk in the medium term.

EASTERN MOUNT LOFTY PRESCRIBED WATER RESOURCES AREA WATER ALLOCATION PLAN



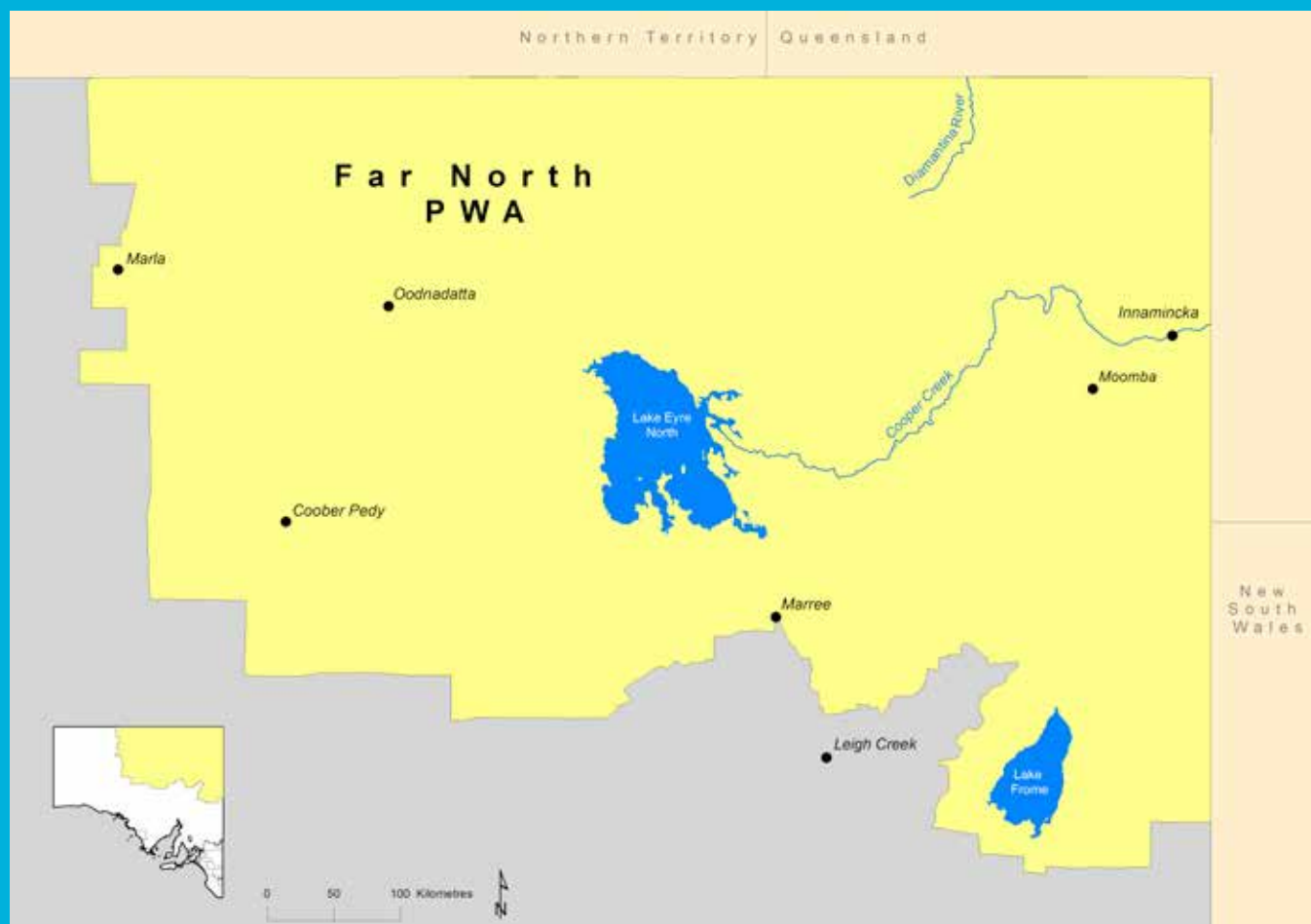
Context

The Eastern Mount Lofty Ranges PWRA lies on the south-western boundary of the MDB and covers the surface water, watercourses and groundwater encompassed within the area. Most surface water run-off and groundwater recharge occurs in the upper reaches of the area and is highly seasonally variable. All water resources are highly developed, with the majority of extraction in the area from the diverse groundwater resources and captured and stored surface water run-off. Consumptive water use includes irrigation (primarily wine grapes and pasture) and stock and domestic uses. Several wetlands and springs of high ecological value occur across the area. Managing the impact of growth in diversion and extraction – particularly in the numbers and capacity of farm dams and volume of groundwater extraction – is the primary management driver for the PWRA.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This is the first WAP developed for the PWRA. The plan incorporates the Angas Bremer PWA (previously managed under a separate WAP). The plan was adopted on 17 December 2013.
2. Does the plan include key assessments?	Yes	Key assessments were conducted during plan preparation, including detailed specification of environmental water needs and resource capacity. Assessment of the economic value of water is generally qualitative only.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	It is noted in the plan that some areas of resource decline have occurred under current levels of demand and are at risk of overuse. A comprehensive extraction and diversion regime is set under the plan to meet current consumptive demands and protect ecologically significant low flows. The plan clearly identifies that a proportion of identified environmental water requirements are traded off to meet current consumptive demands. Resource condition indicators are detailed.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Numerous sets of objectives for the plan's environmental, allocation, trade, permits and monitoring provisions are detailed. There could be greater clarity in how these sets of objectives interact. The lack of performance indicators hinders ongoing assessment of all plan objectives.
5. Does the plan facilitate trade?	Yes	Trade can occur under the plan and in accordance with the NRM Act 2004. Barriers to trade are justified to protect resource condition and maintain access to water for all users.
6. Is interception appropriately considered and integrated into the plan?	Yes	Water intercepted by farm dams and plantation forestry represents a significant proportion of total water extraction in the PWRA. Estimated interception is accounted for in the development of volumetric extraction limits. All new dam developments are subject to water-affecting activity permit requirements. Overall dam capacity must not exceed specified catchment and zone interception limits and low-flow bypass provisions require returns from all new and some existing dams (all licensed dams and stock and domestic with capacity greater than 5 ML) and licensed watercourse diversions. Subject to the relevant parts of the NRM Act 2004 being enacted, future commercial forestry developments in the area would be subject to water-affecting activity permit requirements.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Significant groundwater/surface water connections are identified across the PWRA. Groundwater contribution to stream baseflow is of high ecological importance in some areas, particularly during periods of low flow. Connectivity is managed through quarantining of groundwater baseflow contribution and buffer zones for extraction near watercourses and groundwater-dependent ecosystems (GDEs).
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental water provisions are clearly identified and managed through the plan's extraction and licensing regime that limits extraction, protects low flows and groundwater discharge and controls the development of water-affecting activities. Provisions for specific ecosystem allocations are also included in the plan but it is not clear that outcomes of environmental flow arrangements will be monitored and reported.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The plan only became operational in late 2013. It has a detailed resource and allocation monitoring framework. There is still some uncertainty associated with arrangements for implementation of monitoring and reporting on ecosystem health. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan has been developed with consideration of the risks to the environment and other users from periods of low rainfall, inflow and recharge and includes measures and response triggers to manage these risks. Potential long-term impacts of climate change are to be monitored and assessed in future plan reviews.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive consultation with stakeholders, in line with the requirements under the NRM Act 2004 and a detailed consultation plan. Indigenous values have not yet been identified but will be dealt with in the next iteration of the plan as part of South Australia's Basin Plan implementation requirements.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan only became operational in late 2013, so an assessment of this criterion is not possible at this time.

FAR NORTH PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



Context

The Far North PWA covers a large part of the state and includes the encompassed artesian and subartesian underground water resources of the Great Artesian Basin (GAB) in South Australia. Located in the far north-eastern corner of the state, the arid climate of the area is characterised by very low average annual rainfall and very high summer temperatures. Most underground water recharge occurs in the GAB recharge zones in eastern Queensland and NSW. The majority of extraction in the area is from the artesian aquifer, being the major water supply for mining, the pastoral industry and domestic use and for supporting the expanding tourism industry. Several natural artesian mound springs of high ecological, cultural and social value occur in the area, many of which are listed as threatened ecological communities under the *Environmental Protection Biodiversity and Conservation Act 1999*. A cross-jurisdictional artesian bore capping program implemented during the past decade has seen improvement in pressure levels across the basin. Maintenance of the basin potentiometric surface and water quality are the primary resource management drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	Following a delay in its development, the plan was adopted in February 2009. The plan is scheduled for review in 2014.
2. Does the plan include key assessments?	Yes	All key assessments were conducted during plan preparation. There is limited assessment of the economic value of water-dependent activities.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan prevents overuse by setting management zone volumetric allocation limits to protect current artesian aquifer pressure and defining buffer zones for well development.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan details objectives and operating principles and actions designed to achieve these objectives. Measurement of progress is hindered by lack of clear performance indicators and relatively limited monitoring arrangements.
5. Does the plan facilitate trade?	To some extent	Trade can occur in accordance with provisions in the plan and legislation. Preventing trade between different industries is justified on resource and/or environment protection grounds and in the context of the critical supply needs in the arid environment.
6. Is interception appropriately considered and integrated into the plan?	Yes	Groundwater extraction for stock and domestic purposes and mining accounts for the majority of extraction in the area. Both mining and stock and domestic extractions are licensed.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	There is limited groundwater/surface water connectivity identified. Primary connectivity for the confined system is the mound spring discharge. Maintaining discharge to springs is a management objective of the plan.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets out environmental objectives and details environmental water requirements (currently understood to a limited extent). A range of measures designed to protect the ecologically significant mound springs and wetlands are in place. The plan details current and planned monitoring arrangements for assets.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	A resource and allocation monitoring framework is set out under the plan, although it is noted that current monitoring arrangements can be improved technically and spatially. Groundwater and ecosystem health monitoring reports have recently been publicly released. A national monitoring network for the GAB has been implemented across GAB member states and this supports plan monitoring arrangements. Monitoring data will be evaluated and reported at the time of plan review. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan notes the potential impact of variability and climate change, with limited medium-term impact on the resource. Climate-change-driven changes in future rainfall patterns across the basin recharge zones will affect future artesian pressure, although this will only be observed over very long timeframes.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive engagement with stakeholders through the planning process, incorporating the interests and values of the identified stakeholders.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The plan was adopted in 2009 and public reporting of monitoring and evaluation of plan outcomes is not scheduled until the 2014 plan review. The 2012 groundwater status report notes that groundwater levels and salinity levels have remained relatively stable. Aquatic ecosystem health monitoring reported 95 per cent of ecosystems in at least 'fair' condition and 62 per cent rated 'good' or 'very good'.

LOWER LIMESTONE COAST PRESCRIBED WELLS AREA WATER ALLOCATION PLAN

Context

The Lower Limestone Coast PWA is located in the south-east of South Australia, about 300 km from Adelaide. The first-generation plans that covered this area were the Comaum-Caroline, Lacapède Kongorong and Naracoorte Ranges plans. These three PWAs were amalgamated to form the Lower Limestone Coast PWA in 2004, with a second-generation plan to cover the entire planning area adopted in 2013. Pasture is the dominant irrigated crop type accounting for about 60 per cent of the total licensed volume of water extracted for the purpose of irrigation. Other important crops include lucerne, potatoes and vines. Plantation forest impacts on the regional groundwater resource are significant, particularly where the watertable is shallow. The most widespread influence on groundwater levels in the Lower Limestone Coast PWA is reduced recharge due to drier conditions in recent years.

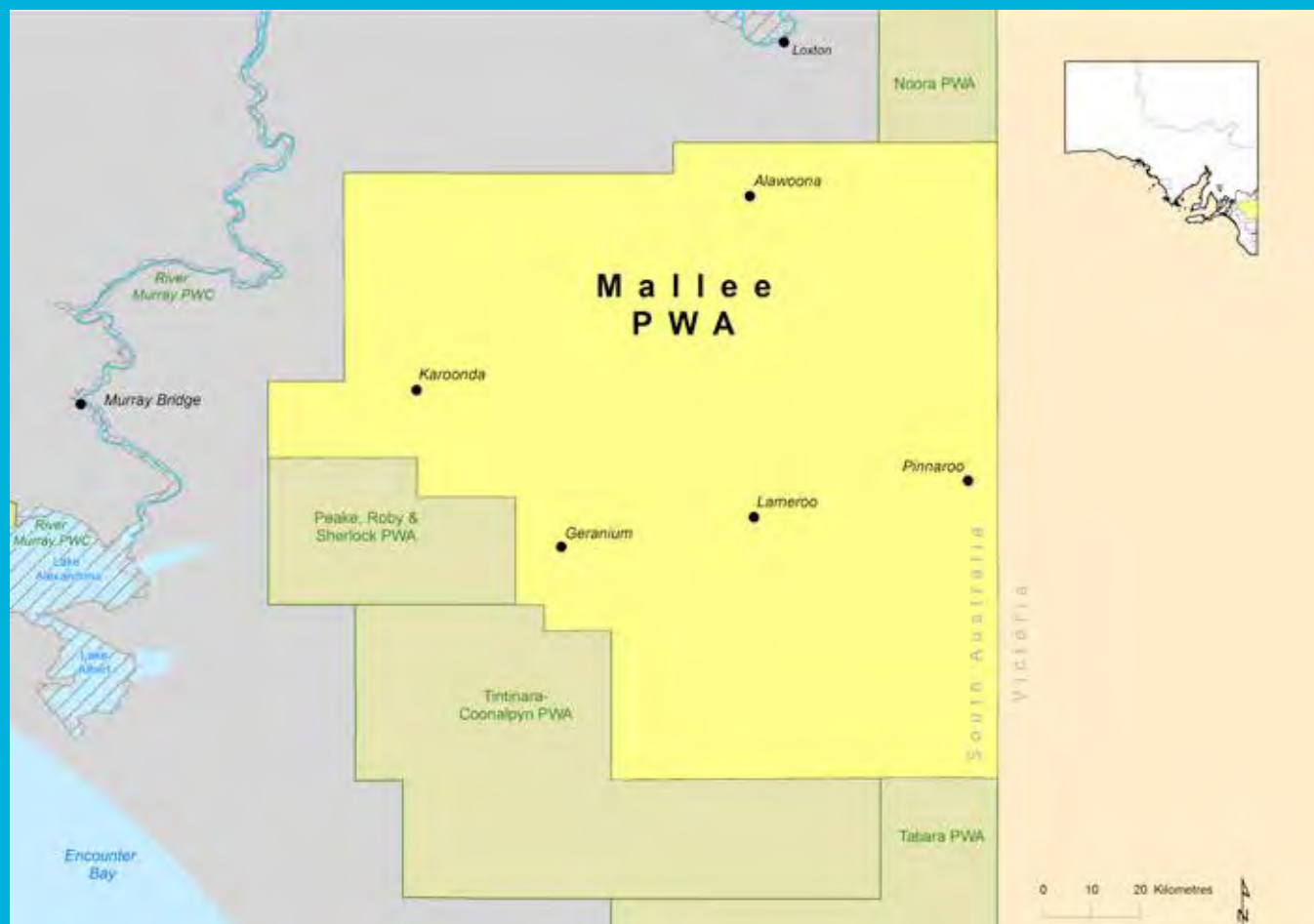


Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This second-generation plan was adopted in November 2013. The first-generation plans were the Comaum-Caroline, Lacapède Kongorong and Naracoorte Ranges plans. Considerable time was taken for development of this complex plan with considerable research undertaken and best use of available information made. The plan will be reviewed within 10 years of adoption.
2. Does the plan include key assessments?	Yes	The plan has been informed by extensive studies of environmental requirements, identification of GDEs, connectivity, condition and capacity of the resource to supply demand. A risk assessment was used to focus management action to areas of most need. Social or economic impacts of the plan are not identified and trade-offs between environmental, social and economic risks are not clear, including risks associated with unconventional gas development.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan recognises areas of overuse in the plan area. There is a clear pathway to progressively reduce entitlements over the plan's life to within identified extraction limits, which also includes a review to assess progress. Extraction limits are set to maintain current water levels and quality and, where required, improve declining trends in groundwater levels and rising salinity.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes separate objectives for water allocation, permits, transfers and monitoring, but there are no clear objectives for the plan as a whole, or a logical hierarchy between those included.
5. Does the plan facilitate trade?	Yes	Trade can occur in accordance with the provisions of the plan and legislation. Trade between management zones is limited to within identified limits and in some cases the use. Volumetric-based licences have been issued to all users, including for plantation forestry.
6. Is interception appropriately considered and integrated into the plan?	Yes	Interception by plantation forestry is regulated through the allocation framework and will be subject to the use limits and provisions in the plan after the Minister declares the Lower Limestone Coast PWA a 'declared forestry area'. Mining and other industries that intercept water or result in co-produced water are considered in the plan and require an authorisation for water use, but in the case of co-produced water are not fully constrained by the extraction limits identified in the plan. Mining and geothermal energy may extract water above the extraction limit, but need to return that water to the same source aquifer from which the water was taken.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan notes the different areas of connection between generally undeveloped surface water resources and the underground water resources, particularly local wetlands that are dependent on groundwater. Connected areas with a high risk of impact are identified and included within management provisions.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Water level and quality conditions are described in the plan and water-dependent ecosystems are identified. Environmental water requirements are quantified. There is extensive monitoring occurring but the links to environmental objectives in the plan are not always clear.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The plan includes a monitoring, evaluation and review framework that sets out the timing and responsibilities for monitoring. There is no clear linkage between the framework and all of the objectives included in the plan. The plan only became operational in 2013, so it is too early to see any monitoring results or reporting in the context of plan implementation.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan has been developed with consideration of risks to the environment and other users from climate change and climate variability. Basic measures are in place to manage expected low-level risks in the short term. While risks are broadly identified, there is limited detail on the long-term strategies for managing the effects of climate change.

Report card criteria	Assessment	Commentary
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved engagement with stakeholders, in line with legislative requirements. To date, Indigenous values have not been identified.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan only became operational in late 2013, so an assessment of this criterion is not possible at this time.

MALLEE PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



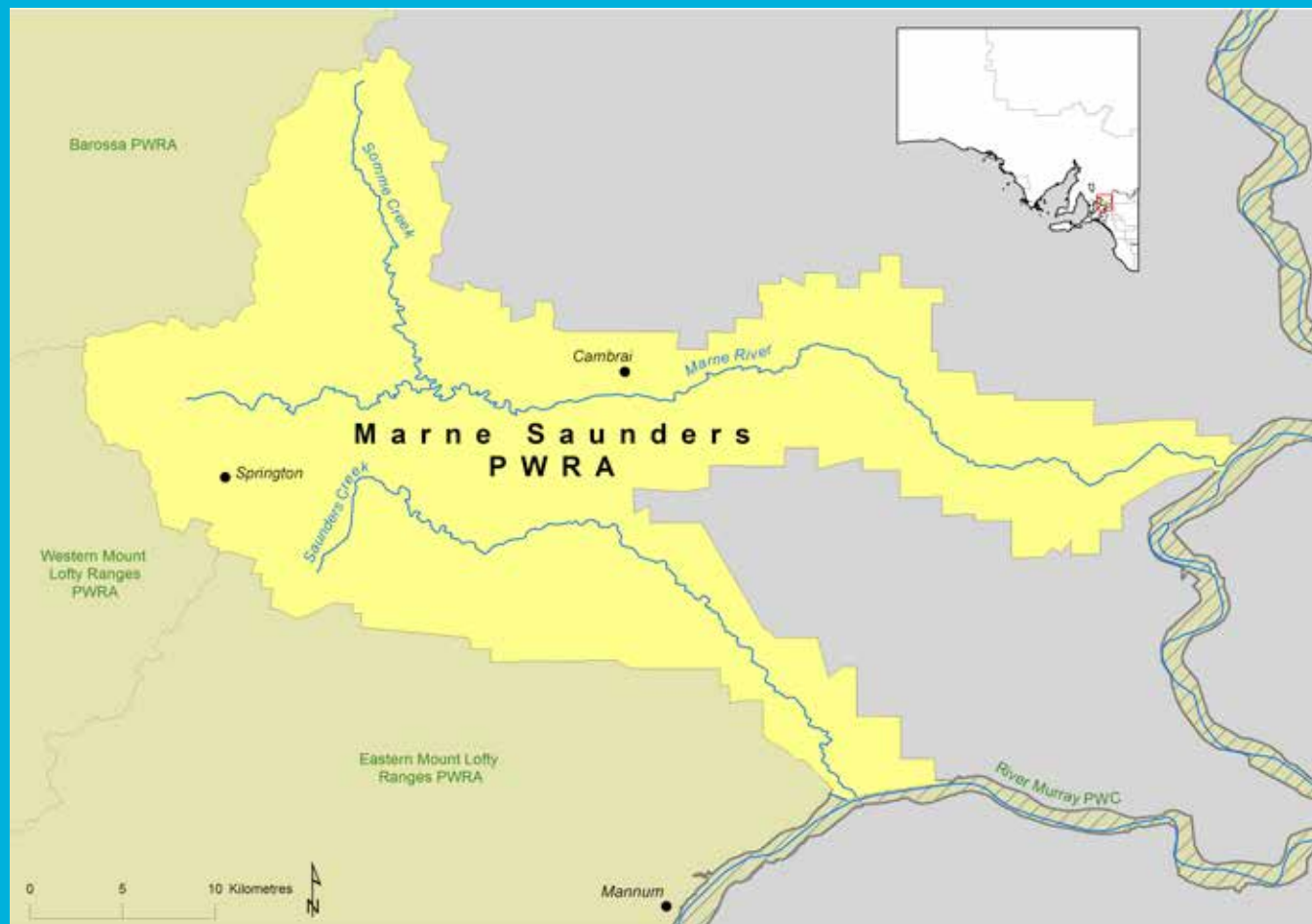
Context

The Mallee PWA, located 150 km east of Adelaide, covers the confined and unconfined aquifers of the MDB found in the area. Water in these aquifers flows slowly towards the River Murray, which ultimately drains all aquifers in the basin. Consumptive water use is from the confined aquifer and is heavily dominated by irrigation, primarily for potatoes, lucerne, cereal and nut and olive trees. Townships within the PWA rely on reticulated supply sourced from the aquifer. Key pressures in the PWA are managing the ancient resource to sustainably meet increasing irrigation demand and preventing unacceptable seasonal drawdown impacts.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	There is a plan in place that covers the groundwater resources in the PWA. It is a second-generation plan released in May 2012 that replaces the original plan from 2000.
2. Does the plan include key assessments?	Yes	There are key assessments that inform the plan and its management provisions. Extensive community consultation was conducted to inform social and qualitative economic assessments, and the hydrological assessment was updated from that used for the original WAP. No GDEs are identified for this plan area.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	A joint management decision by South Australia and Victoria has been made to allow controlled depletion of the Murray Group Limestone Aquifer due to the slow moving, robust nature of the aquifer and large amount of storage it has. Controls are in place to manage use within identified limits.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan identifies measurable objectives that link to performance indicators, monitoring and provisions in the plan. These objectives align with the purpose of the plan to manage current extractive use.
5. Does the plan facilitate trade?	Yes	The plan provides for the conversion of area-based licences to tradeable volumetric allocations. The plan facilitates permanent and temporary trade of allocations within the limits of the resource to protect existing conditions and access. The 2012 plan improves the facilitation of trade through the change in management areas and direction of trade.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan considered interception activities but has not included any provision for managing interception due to the low level of impact. Demand from mining use is quantified and monitored, and accounted for in PAV calculations. Future mining expansion is required to be within the limits of the AAVs. Stock and domestic use is the only significant intercepting activity and is likely to remain stable (use levels estimated).
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan considers the extent of connectivity in the prescribed area. It does not include any provisions for conjunctive surface water and groundwater management due to the limited areas of connectivity and the extended timeframes of groundwater movement.
8. Does the plan contain accountable environmental watering arrangements?	Not applicable	The plan does not include principles for environmental water management as there are no GDEs in the plan area. The groundwater resources have been assessed as not supporting terrestrial vegetation or wetlands due to the depth of the aquifers.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	The plan includes a monitoring framework that assesses water use and salinity, in line with the plan's objectives. Reporting has been occurring on a regular basis and the most recent reports are publicly available. Compliance and enforcement requirements are managed through state legislation.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Climate change is considered to the extent that it impacts on demand, but is not included within the planning arrangements because it has no impact on the availability of the resource (i.e. water resources are deep and not connected to rainfall events).
11. Is stakeholder engagement in the planning process adequate?	Yes	There was extensive community consultation to inform the review of the plan in line with legislative requirements. All stakeholders were provided with an opportunity to contribute to the review at different stages of the process. The Border Groundwater Agreement Review Committee remains to provide advice on cross-border water resource issues. Aboriginal values were not fully incorporated, but engagement is underway with appropriate groups to quantify current and future Aboriginal water needs.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The plan's objectives are not specifically reported against. There has been regular annual public reporting against the previous plan in regard to water use and water quality, regional groundwater levels and regional salinity levels, but no reporting since 2012 to reflect changes in the amended plan. Overall, regular water use reporting shows that generally the level of use is within acceptable limits.

MARNE SAUNDERS PRESCRIBED WATER RESOURCES AREA WATER ALLOCATION PLAN



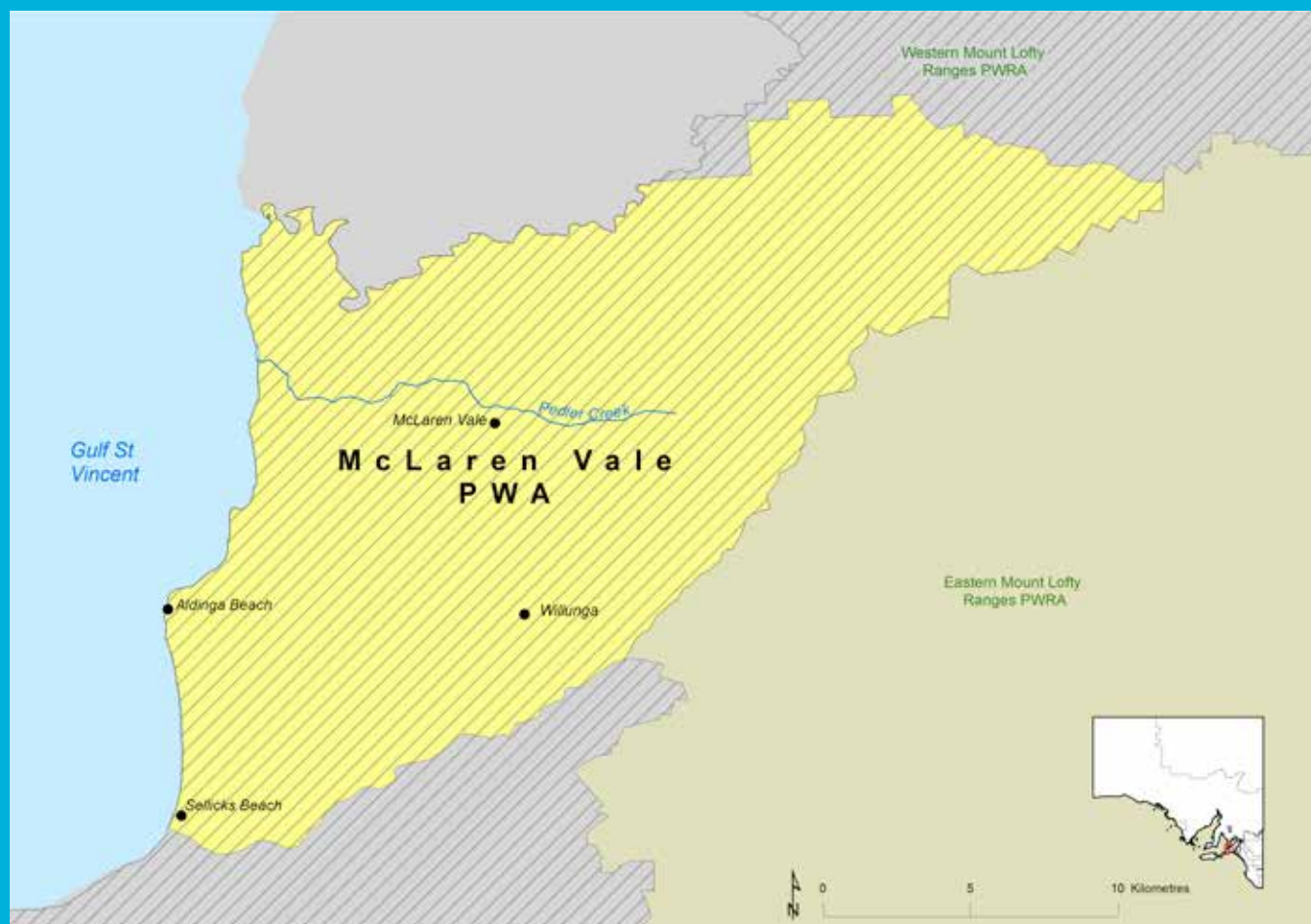
Context

The Marne Saunders PWRA is located on the western boundary of the MDB and covers all surface water, watercourse and groundwater resources in the area. Most surface water run-off and groundwater recharge occurs in the upper reaches of the area and is highly seasonally variable. All water resources are highly developed (with the exception of the fractured rock aquifer), with the majority of extraction from the limestone aquifer and captured and stored surface water run-off. Consumptive water use includes irrigation (primarily wine grapes and lucerne hay) and stock and domestic uses. Several springs of high ecological value occur in the lower reaches of the area. Managing the impact of the rapid growth in diversion and extraction, particularly in the numbers and capacity of farm dams, is the primary management driver.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was adopted in January 2010. The plan will be reviewed within 10 years of adoption.
2. Does the plan include key assessments?	Yes	All key assessments were conducted during plan preparation, with thorough hydrological and environmental assessments. Assessment of the community and economic value of water in the area is largely qualitative.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan notes that parts of the system have been overused from past over diversion and extraction, due in large part to rapid growth in the numbers and capacity of farm dams. Regulation applied outside the plan has reduced entitlements for existing users. Extraction and dam capacity limits are set in the plan to maintain the current ecosystems' watering regime. Resource condition triggers and adaptive management measures to protect low flows are included.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan provides a detailed hierarchy of measureable objectives, underpinned by clear operating principles, indicators, actions and monitoring arrangements.
5. Does the plan facilitate trade?	Yes	Trade can occur in accordance with the plan's provisions and the NRM Act 2004. Barriers to trade are justified on physical constraint and environment protection grounds.
6. Is interception appropriately considered and integrated into the plan?	Yes	Water captured by farm dams and extracted from bores for stock and domestic purposes is accounted for in the development of management zone sustainable extraction limits. The plan details run-off sharing provisions to manage existing dam capacity constraints. A requirement for the return of specified low flows is suspended at present.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan accounts for the level of connection in setting extraction and diversion limits and sets integrated management principles for the highly ecologically significant surface water, watercourse and groundwater connections across the area.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan addresses environmental water requirements through limiting extraction, adaptively managing flow arrangements and controlling the development of water-affecting activities. These measures are (in part) designed to maintain or restore the identified environmental assets.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	An appropriate monitoring and reporting framework is in place to measure performance against plan objectives. Three groundwater and salinity status reports have been publicly released since 2011. EPA condition reports provide some information on invertebrate communities and water quality at several sites in the plan area. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan has been developed with consideration of the risk to the environment and other users from periods of low rainfall, inflow and recharge and includes measures and response triggers to manage these risks. Potential long-term impacts of climate change are to be monitored and assessed in future plan reviews.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive and transparent engagement with stakeholders throughout plan development, well beyond the legislative requirements and consistent with a detailed consultation plan. Indigenous values have not yet been identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The plan was adopted in January 2010. Three monitoring status updates have been released – reporting gradual adverse trends of increased salinity and decreased well levels.

MCLAREN VALE PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



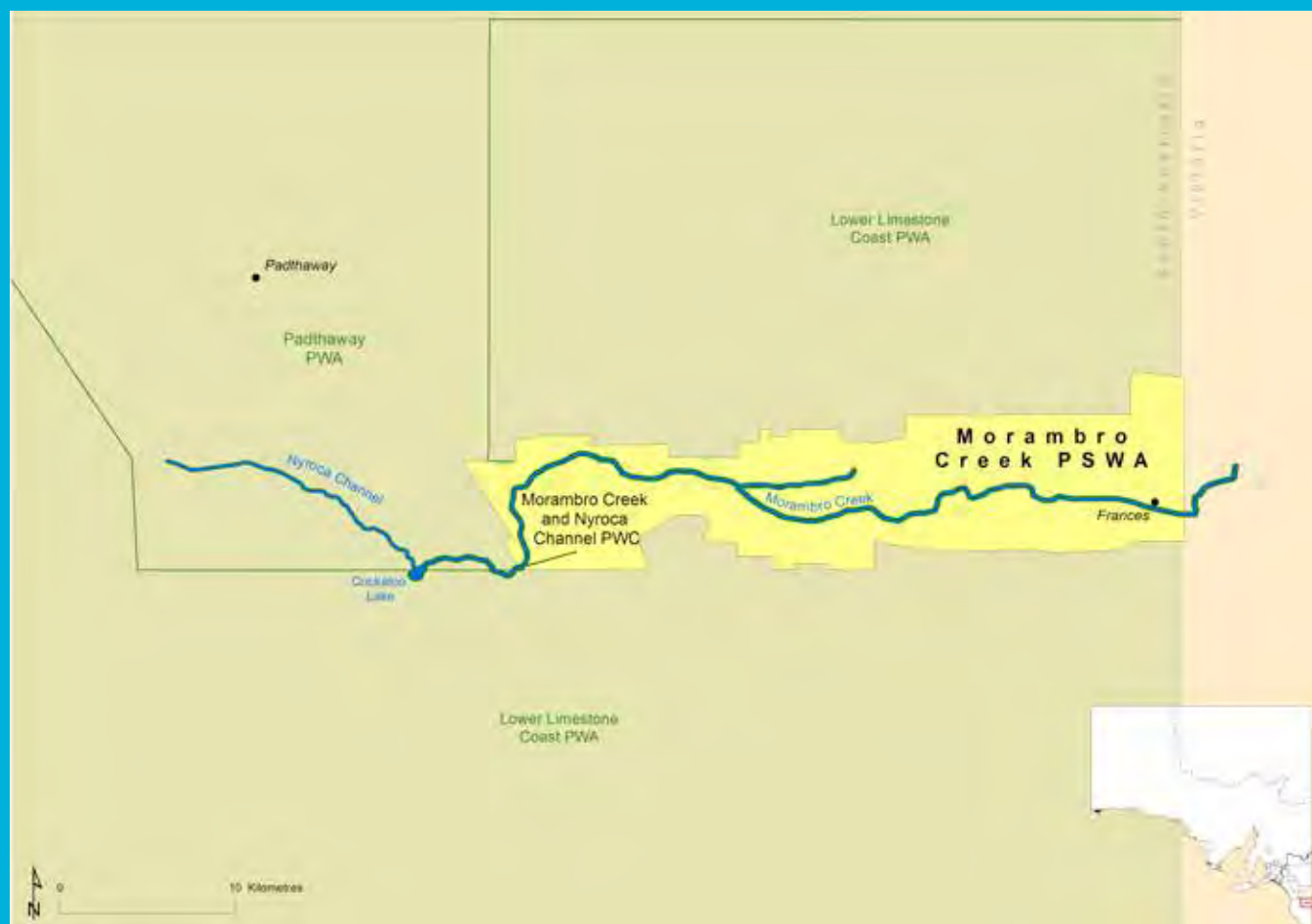
Context

The McLaren Vale PWA, located 40 km south of Adelaide, covers the developed resources of the unconfined and confined aquifers found in the area. The confined aquifers provide for the great majority of extraction within the PWA, with licensed water use dominated by irrigation (primarily wine grapes and almonds). The underground water resources of the area are fully allocated. Remediating existing and preventing further resource stress are the key management drivers. The McLaren Vale PWA is located wholly within the boundaries of the Western Mount Lofty Ranges PWRA.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This second-generation plan was adopted in 2007 and a review was publicly released in 2011. The review recommended no changes to the plan at this stage, but that future management of the McLaren Vale PWA be incorporated into the next iteration of the WAP for the Western Mount Lofty Ranges PWRA.
2. Does the plan include key assessments?	To some extent	Some key assessments were conducted during plan preparation. Assessment of the social and economic values is limited.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not comprehensively prevent overuse. Previous adjustment to water allocations and reduced demand for groundwater has seen some stabilisation of historical falling groundwater levels and rising salinity. The extraction limits set under the plan are based on estimated sustainable yield, to maintain current water levels and quality. Despite extraction limits being significantly greater than current average use, areas of stress persist.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Allocation, transfer and permit objectives are set, underpinned by operating principles, actions and monitoring arrangements. Measurement of progress is hindered by a lack of clear performance indicators.
5. Does the plan facilitate trade?	Yes	Trade can occur under the plan and in accordance with the NRM Act 2004. Barriers to trade are justified to protect GDEs and the resource from further stress.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Unregulated extraction for unlicensed stock and domestic use is a growing interception risk for the prescribed resources, although some metering of this extraction is required under the plan. Given persistent stress in some areas, any increase in unlicensed extraction could undermine resource sustainability.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Connections found in the area are highly ecologically significant, particularly in maintaining watercourse baseflows and wetlands in low-flow periods. The plan seeks to maintain current groundwater discharge and recharge regimes through extraction limits and buffer zones near watercourses. Greater quantification of connectivity will allow for more adaptive conjunctive management.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan provides a qualitative assessment of the water needs of identified GDEs, centred on maintaining current GDE watering regimes. Water to meet these needs is protected through setting volumetric extraction and bore density limits.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	A resource and allocation monitoring framework is set out under the plan, although an ecosystem monitoring program is not detailed. There is evidence that resource monitoring and reporting is occurring in the area with several groundwater status reports publicly released. EPA condition reports provide some information on invertebrate communities and water quality at sites in the plan area. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan has been developed with consideration of the risk to the resource from periods of low rainfall recharge; resource condition triggers allow for ongoing monitoring of variability impacts. The plan does not account for climate change impacts. The plan notes further monitoring and resource assessment is required to better estimate and account for climate change.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive engagement with stakeholders, in line with the requirements under the NRM Act 2004 and a detailed consultation plan. It is unclear whether Indigenous values were identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The plan review notes that there have been adverse trends in groundwater levels and salinity levels, but maintains these trends are gradual and will not lead to a change in the current beneficial use of the groundwater resource in the medium term.

MORAMBRO CREEK AND NYROCA CHANNEL PRESCRIBED WATERCOURSES INCLUDING COCKATOO LAKE AND THE PRESCRIBED SURFACE WATER AREA WATER ALLOCATION PLAN



Context

The Morambro Creek and Nyroca Channel, Cockatoo Lake and the prescribed surface water area are located in the state's upper south-east. The watercourses flow westerly from headwaters in western Victoria and are ephemeral streams that flow on average three in five years. Watercourse and surface water resources are diverted for aquifer recharge in the adjacent Padthaway and Lower Limestone Coast PWAs, and for stock and domestic, irrigation and recreation purposes. The area supports important and sensitive ecosystems and has high social value. Protecting these values from the impact of increased demand for water for aquifer recharge is the key management driver.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was adopted in 2006 and reviewed in 2011. No amendment was required following the review.
2. Does the plan include key assessments?	Yes	Key assessments were conducted during plan preparation, including detailed assessment of the needs of water-dependent ecosystems. Assessments of the economic value of water in the area are qualitative only.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Overuse of the watercourse resource is prevented through the setting of volumetric extraction limits and the requirement for a minimum threshold streamflow rate to be met before diversions are permitted. Total dam capacity limits for surface water diversions are also set for each management area. Extraction limits are set via flow modelling and are reflective of stakeholder agreement to maintain ecosystems in their current condition. Longer-term resource condition triggers are in place and, if exceeded, no further allocations are granted until after the plan is reviewed.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan provides a detailed set of objectives, operating principles and long-term resource condition triggers, underpinning the allocation, transfer and use provisions of the plan. Lack of specific performance indicators inhibits ongoing assessments of plan objectives.
5. Does the plan facilitate trade?	Yes	Trade can occur in accordance with provisions of the plan and the NRM Act 2004.
6. Is interception appropriately considered and integrated into the plan?	Yes	Under the plan, farm dams used for stock and domestic purposes require a permit and are subject to a range of development conditions, including total dam capacity limits for each management area. No other significant interception activities occur in the area.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The surface water and watercourse flows of the area contribute to underlying groundwater recharge, although the extent of recharge is not known. Surface water and watercourse diversion limits set under the plan help protect recharge.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan provides a detailed description of the environmental water requirements of identified ecosystems and assets. Environmental water is provided under the plan through extraction limits and protection of high-flow events, aiming to maintain current ecosystem health.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A resource and allocation monitoring framework is set out under the plan and stream gauging infrastructure is in place to monitor flow events. No resource reporting is required under the plan and no evidence of recent monitoring is found. Ecosystem monitoring parameters are included in the plan, but a monitoring program is not specified. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Climate variability is appropriately managed in the plan. In this ephemeral system, extractions are only permitted once flow exceeds defined thresholds, protecting flows for water-dependent ecosystems during periods of low inflows. There is no consideration of the long-term impacts of climate change in the plan, although broad adaptive management strategies are described at the regional level.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive engagement with stakeholders, in line with legislative requirements and a consultation plan. Indigenous values have not been identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The plan was reviewed in 2011 and no amendments recommended because plan objectives were assessed as being met. The review report is not publicly available.

MUSGRAVE PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



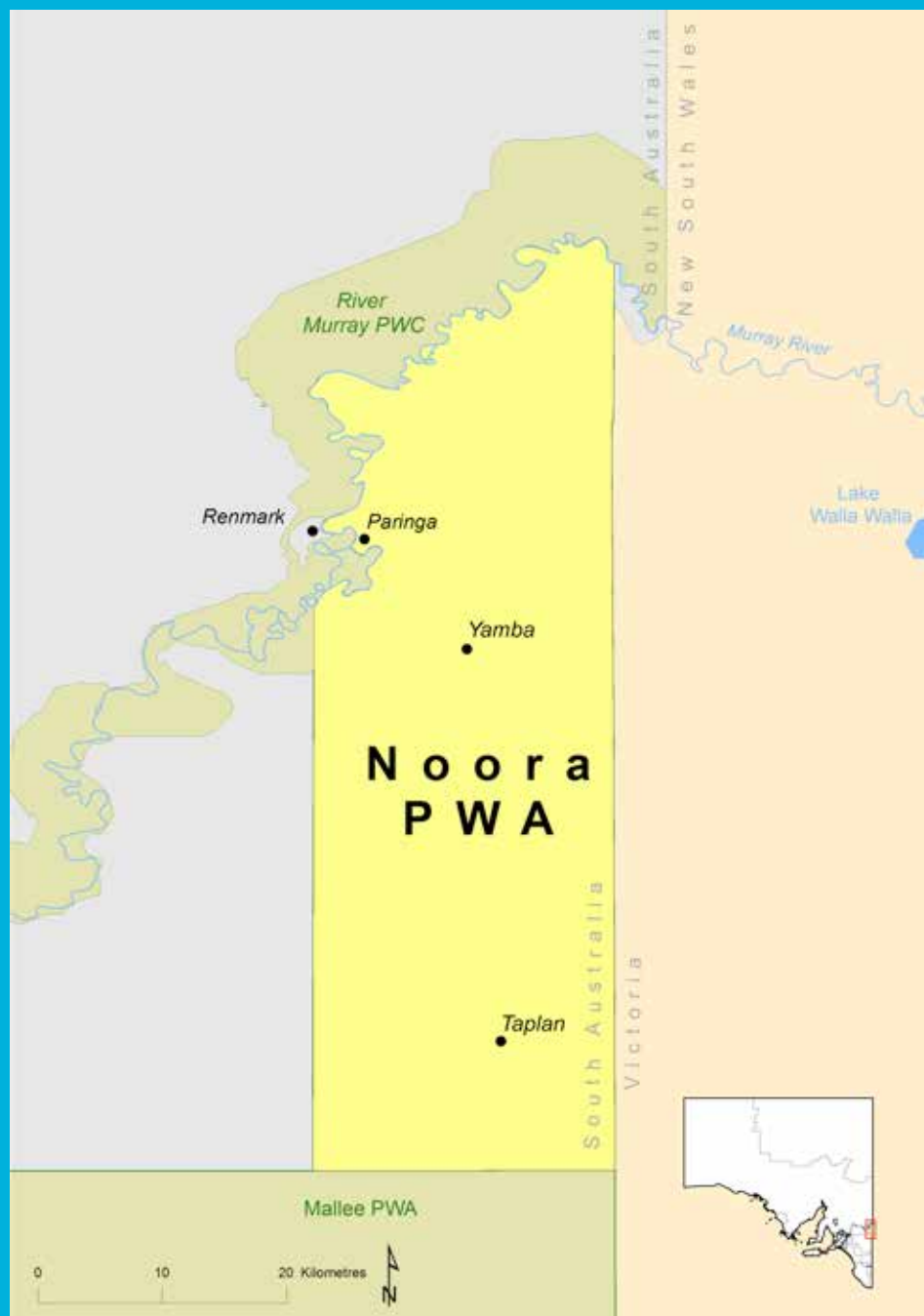
Context

The Musgrave PWA, located in the western Eyre Peninsula, covers the resources of the unconfined and confined aquifers found in the area. The aquifer of the unconfined Quaternary Bridgewater Formation is not continuous across the PWA: it occurs as a series of isolated lenses and is highly sensitive to periods of low and high rainfall recharge. These lenses predominantly supplement reticulated water supply across the lower Eyre Peninsula, with the confined aquifer providing limited stock and domestic water supplies. Preventing stress on the highly sensitive unconfined aquifer to secure reticulated water supplies is the key management driver.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was adopted in 2001 and reviewed in 2006. An amended plan, to be incorporated into the Southern Basins PWA WAP, is under development.
2. Does the plan include key assessments?	Yes	All key assessments were conducted during plan preparation, although the needs of GDEs are identified in relative terms only. A range of technical investigations and scientific assessments have now been conducted to support development of the amended WAP (the Eyre Peninsula Groundwater Allocation, Planning and Management Project).
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Overuse is prevented by specifying allocations as a percentage of annual recharge to each groundwater lens, reflecting the high rainfall recharge correlation. The plan notes a conservative allocation regime is set, protecting a significant proportion of recharge intended to maintain ecosystems in their current state. There has been a recent restriction on extractions from the Poldia lens in response to extended periods of low rainfall recharge.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Objectives for the plan's allocation, transfer and permit criteria are detailed, underpinned by a range of operating principles and actions and relevant monitoring arrangements. Specific environmental objectives are lacking in the plan, as well as performance indicators to allow for ongoing assessment of objectives.
5. Does the plan facilitate trade?	Yes	Trade can occur under the plan and NRM Act 2004. Trading restrictions are reflective of the disconnected nature of the resource or to protect other users and the environment.
6. Is interception appropriately considered and integrated into the plan?	Yes	A small proportion of the groundwater resource is used for unlicensed stock and domestic purposes. Growth in this use is not expected.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Most recharge for the primarily extracted unconfined aquifers is via rainfall infiltration through limestone solution features. Protection of these high recharge zones occurs through water protection zones set under development legislation.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan sets out the general and relative needs of identified underground water-dependent ecosystems, and protects a significant proportion of annual recharge from extraction to maintain natural discharge regimes. The plan lacks specific environmental objectives and while ecosystem health monitoring parameters are identified, a monitoring program is not specified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A detailed resource monitoring framework is set out under the plan and there is evidence that resource monitoring is occurring. Groundwater status reports have recently been released but there is no reporting on ecosystem health. Compliance and enforcement provisions are specified under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan attempts to manage the risk of low rainfall recharge to the Quaternary Limestone Aquifer through annual proportional allocations in line with recharge. Potential impacts of climate change and broad adaptive management strategies are considered at the regional level.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive engagement with stakeholders, managed by a community consultative committee and in line with legislative requirements. Indigenous values have not yet been identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Recent groundwater status reports generally note no adverse trends. Although only limited extractions from the highly developed Poldia lens have been permitted since 2008, water levels continue to decline. Recent reporting on the Poldia lens identified gradual adverse trends which pose a low risk to the resource in the medium term. There is no publicly available information on ecosystem health monitoring.

NOORA PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



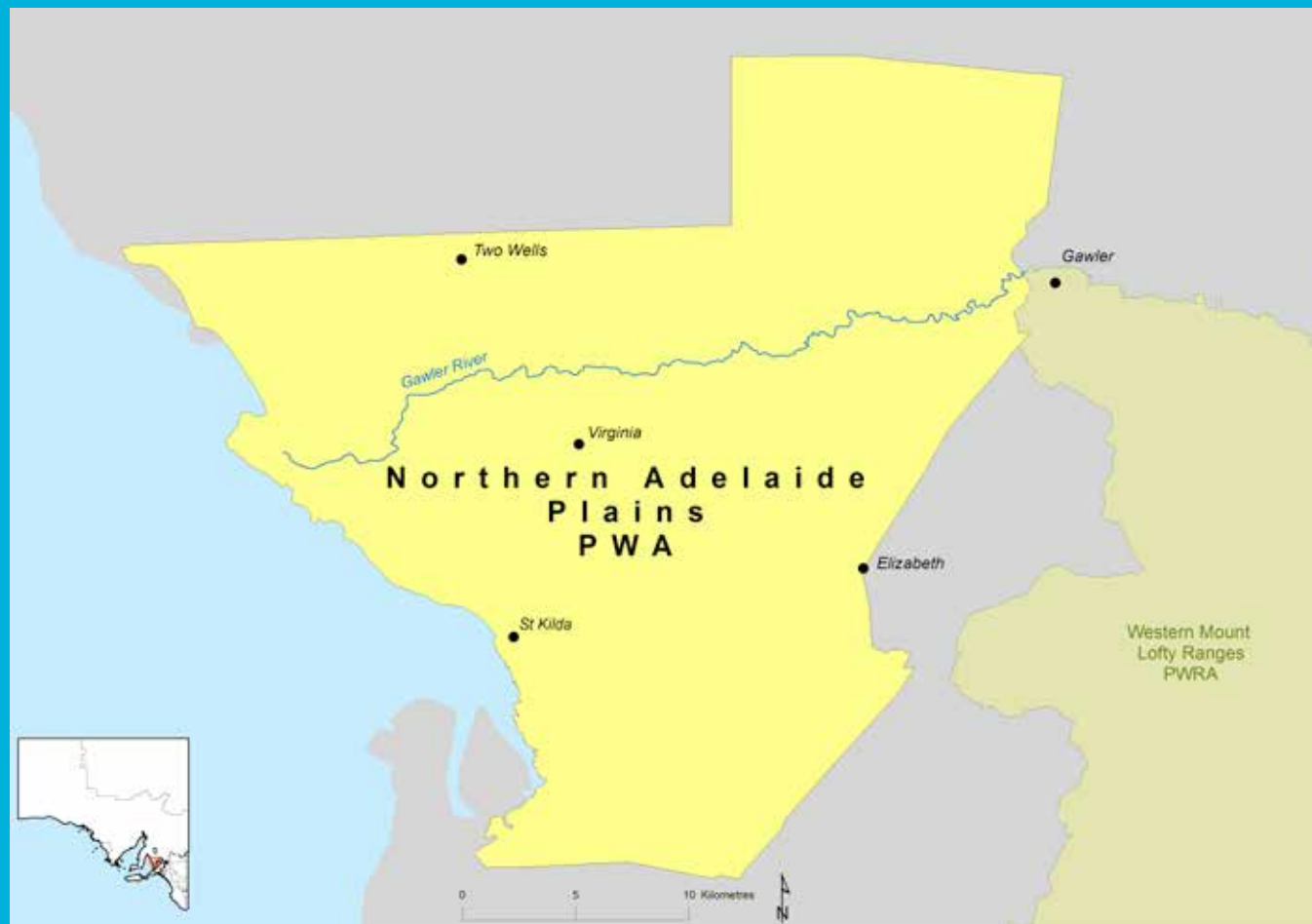
Context

The Noora PWA, located 250 km north-east of Adelaide, covers the confined and unconfined aquifers of the MDB found in the area. Most resources in the area are saline. There is little consumptive water extraction in the area, limited to a small number of stock and domestic users. Salt disposal from the intensive irrigation along the River Murray occurs in the north of the area, where a salt interception scheme is in operation. The key management driver is preventing increased salinity across the area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was adopted in January 2001 and reviewed in 2006. As part of its Basin plan implementation commitments, South Australia will amend the Noora WAP, which will be combined with the Peake, Roby and Sherlock and the Mallee WAPs to form part of the SA Murray Region water resource plan. The WRP needs to be in place by the end of 2017.
2. Does the plan include key assessments?	Yes	Relevant assessments were conducted during plan preparation, commensurate with the current and projected low demand for water resources in the plan area.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	There is a very low risk of overuse, given the development limitations of the largely saline resource. Overuse is generally prevented by inclusion of annual extraction limits in line with permissible annual volume limits agreed under the groundwater border agreement with Victoria. This extraction limit is based on components of recharge, lateral throughflow and mining of storage.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan details measureable objectives, underpinned by operating principles and monitoring arrangements for allocations, transfers and permits.
5. Does the plan facilitate trade?	Yes	Trade can occur under the plan, although there is only one licence holder in the plan area at present. Restrictions on trade into adjacent management areas are justified to protect existing users in these zones.
6. Is interception appropriately considered and integrated into the plan?	Yes	There is a very low risk to the resource posed by interception activities. Small volumes of stock and domestic extractions represent the main interception activity. These extractions are included in current allocation limit assessments, and are not expected to increase significantly in the future.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan covers developed underground water resources in the plan area. There are no significant surface water resources in the plan area beyond a small number of connected saline wetlands. Given the very low level of extraction in the plan area, conjunctive arrangements are not required.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Natural and induced saline wetlands occur in the plan area, supported by year-round discharge from saline unconfined aquifers and the salt disposal scheme. Under the plan, discharge to wetlands is protected by preventing extractions in the vicinity of the identified natural wetlands; arrangements under the plan are adequate considering the low level of risk to ecosystems from resource development.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	The plan review and modelling reports note that adequate monitoring is occurring, targeted at key risks, and fit for purpose. Some expansion in the current monitoring network and the introduction of GDE health was suggested at plan review, but no evidence has been found that this has occurred.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Given the very low level of resource development, and current extractions from the confined aquifer, climate change and variability poses minimal risk to this resource.
11. Is stakeholder engagement in the planning process adequate?	To some extent	While a range of public consultation requirements for plan development were specified under legislation, documented evidence of engagement during development of the first-generation plan is no longer available. The plan review involved targeted engagement with identified stakeholders to assess the effectiveness of and attitudes to the existing plan. Matters raised by stakeholders were considered and responded to in the plan review.
12. Have identified outcomes been achieved during the reporting period?	To some extent	No explicit reporting on achievement of plan objectives has been conducted, although recent groundwater modelling found no significant impact of the irrigation salt disposal and interception scheme on existing users.

NORTHERN ADELAIDE PLAINS PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



Context

The Northern Adelaide Plains PWA, located 30 km north of Adelaide, covers the unconfined and confined aquifers found in the area. The confined aquifers provide all commercial extraction within the area, with limited stock and domestic supplies sourced from the unconfined aquifers. Consumptive water use is dominated by irrigation for the extensive horticultural industry long established in the area. Achieving a long-term sustainable extraction regime for the highly developed aquifers, accounting for the effects of rapid land use change to urban housing and managing the external impacts of localised drawdown, are the key management drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was adopted in December 2000 and reviewed in 2004. The concept statement for a new plan incorporating the Northern Adelaide Plains, Dry Creek and Central Adelaide PWAs was released in January 2013. Resource capacity modelling has been completed to inform sustainable extraction limits for the new plan.
2. Does the plan include key assessments?	To some extent	Key assessments were conducted during plan preparation. The assessment of the social and economic value of water is qualitative only.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	No	The plan identifies significant and ongoing overallocation in some parts of the PWA. The plan notes that current levels of extraction are at acceptable limits, although allocations significantly exceed current extractions. No sustainable extraction limit or pathway to address overallocation is set under the plan. Measures in the current plan to prevent overuse include prohibiting transfers into areas of stress and only allowing 80 per cent of artificially recharged water to be taken.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Objectives for each group of plan management criteria are detailed, underpinned by a range of operating principles and actions. Relevant resource monitoring arrangements are specified, although no environmental health monitoring arrangements are included. The lack of performance indicators inhibits the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Trade can occur in accordance with the plan and the NRM Act 2004. Lack of an agreed sustainable extraction limit and clearly defined trading zones are inhibiting expansion of an efficient water market in the area.
6. Is interception appropriately considered and integrated into the plan?	Yes	A licence is required for stock and domestic extraction in the Northern Adelaide Plains. No other major interception activities are anticipated in the PWA.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Watercourses in the area provide ecologically important freshwater recharges to the largely unused shallow unconfined aquifers in the area. Management arrangements are in place for the shallow Quaternary aquifers to maintain current levels of underground water salinity.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets out the needs of identified GDEs, and provides for these needs through limiting allocations to protect underground water salinity, particularly in summer months.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	A resource and allocation monitoring framework is set out under the plan and there is evidence that generally well-targeted resource monitoring is occurring. The first annual groundwater status report has been released. Ecosystem monitoring arrangements are not specified. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Seasonally driven demand is managed through limiting extraction in highly drawn areas. There is no discussion in the plan about climate change impacts. The deep and confined resource is largely disconnected from rainfall variability and, as such, risk to the resource from climate variability and change is low.
11. Is stakeholder engagement in the planning process adequate?	To some extent	While a range of public consultation requirements for plan development were specified under legislation, documented evidence of engagement in the development of the first-generation plan is no longer available.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Plan objectives were not specifically assessed during the review of the first-generation plan. Recent resource assessments indicate that the long-term resource stress appears to have stabilised over the plan's life, but areas of declining water levels and increasing salinity persist. The groundwater status report indicates the identified adverse groundwater trends present a low risk to the resource in the medium term. No information on the health of GDEs is available. Development of an amended plan to address stress and improve management arrangements is underway.

PADTHAWAY PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



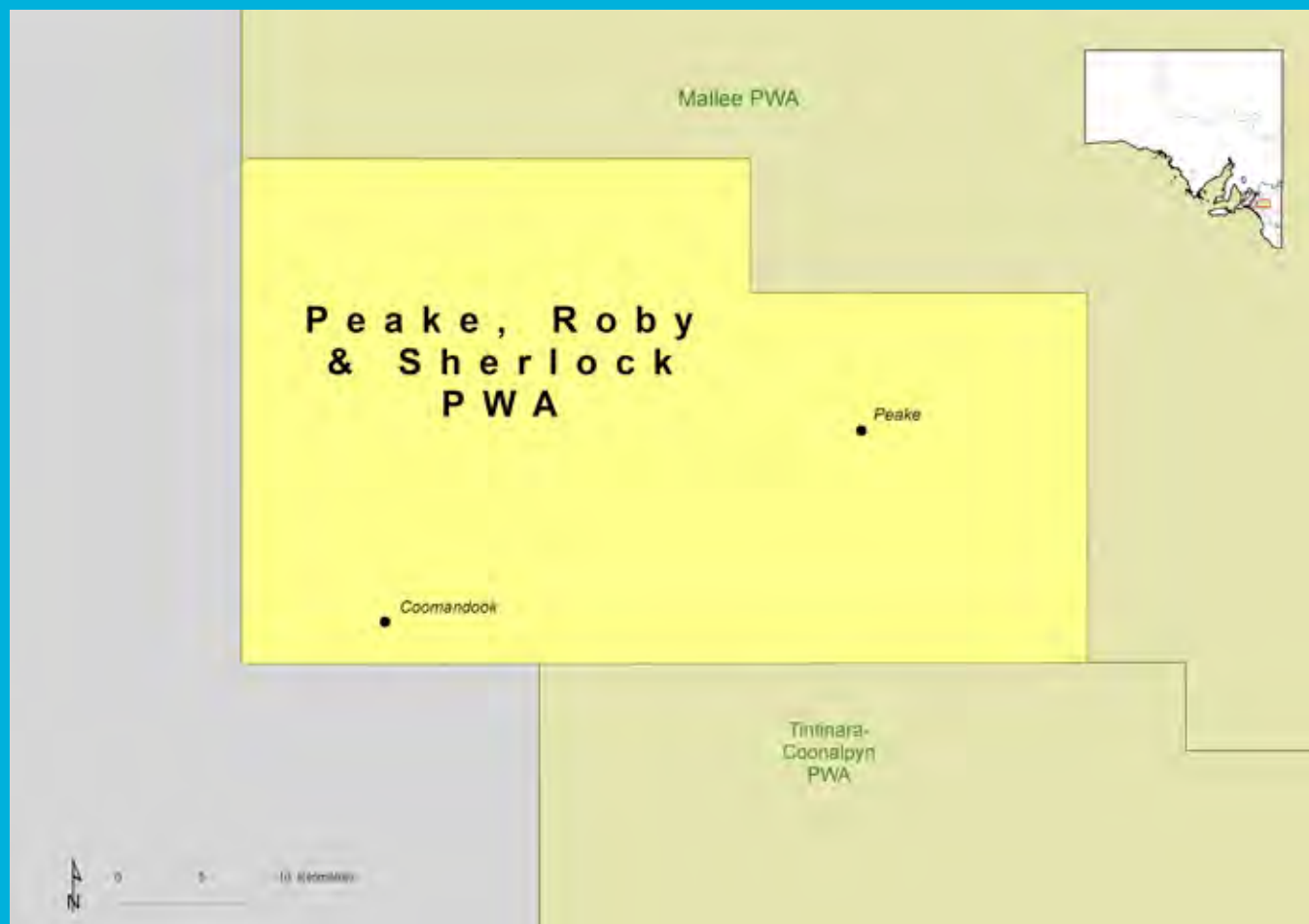
Context

The Padthaway PWA, located in the state's upper south-east, covers the unconfined and confined aquifers found in the area. The unconfined aquifer provides all the commercial extraction in the area, with the confined aquifer providing limited stock and domestic supply. Consumptive water use is dominated by irrigation, primarily for pasture, lucerne seed and viticulture. Heavy usage, increasing soil and water salinity, and high levels of seasonal variability have resulted in persistent resource stress in parts of the area. Alleviating this stress and preventing additional resource stress across the resources are the key management drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This second-generation plan was adopted in 2009. The plan is due to be reviewed within 10 years of adoption.
2. Does the plan include key assessments?	Yes	All relevant key assessments were conducted during plan preparation. The plan notes that the level of dependence of ecosystems on underground water in the plan area has not been fully studied.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan notes historical overuse and overallocation has occurred in the area, with declining water levels and quality. A pathway to sustainable extraction is set through significant reductions to indicative volumetric allocations and an adaptive management framework for reducing allocations to the limit by 2014. Extraction limits set under the plan are modelled to minimise impacts on water levels and salinity, and to maintain throughflow to flush salts. Resource condition triggers identifying overuse are included.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan provides a detailed set of objectives, operating principles and monitoring arrangements, underpinning the allocation, transfer and permit provisions of the plan. The lack of performance indicators inhibits the ongoing assessment of objectives.
5. Does the plan facilitate trade?	Yes	Trade can occur in accordance with the plan and the NRM Act 2004. Restrictions on trade between hydrogeologically based management areas is justified to prevent localised over-concentration of extraction and associated resource and third-party impacts. Volumetric conversion of licences under the plan allows for expansion of a more efficient water market in the plan area.
6. Is interception appropriately considered and integrated into the plan?	Yes	Stock and domestic extractions included in current allocation limit assessments are not expected to increase significantly in the future. At present the plan does not include provisions to manage plantation forestry development. However, under recent amendments to the NRM Act 2004 (Part 5A) when section 10 of the <i>NRM (Commercial Forests) Amendment Act 2011</i> comes into operation, commercial forests in the Padthaway PWA will require a permit under the regional NRM plan for the South East.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The connection between watercourse and surface water resources and the groundwater resources is generally low, except for some small wetlands that rely on groundwater discharge. Connectivity impacts are managed through extraction limits and well setback requirements around discharge sites.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets water level, quality and throughflow targets to protect identified GDEs. These targets are to be met through limiting the volume and location of water extraction. The plan notes that an improved understanding of how ecosystems depend on underground water in the area is needed.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A detailed resource and allocation monitoring framework is set out under the plan and there is evidence that appropriately targeted groundwater monitoring is occurring. Status reports since 2010 provide information on water use, water levels and water quality trends but information relevant to other objectives is absent. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Resource condition triggers and flexible allocation and trading arrangements are responsive to climate variability. Risks to the resource from climate change are noted, but there is no assessment of the potential impacts on resource capacity.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive engagement with stakeholders, in line with legislative requirements and a consultation plan. South East NRM Board and regional staff are currently working with the South East Aboriginal Focus Group to help define cultural water to provide a basis for quantifying Indigenous water needs.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is no specific assessment of plan objectives, and available information is limited to use, water levels and quality. There is no information on environmental objectives. Recent status reports assigned a yellow status; that is, 'adverse trends indicating low risk to the resource in the medium term'.

PEAKE, ROBY AND SHERLOCK PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



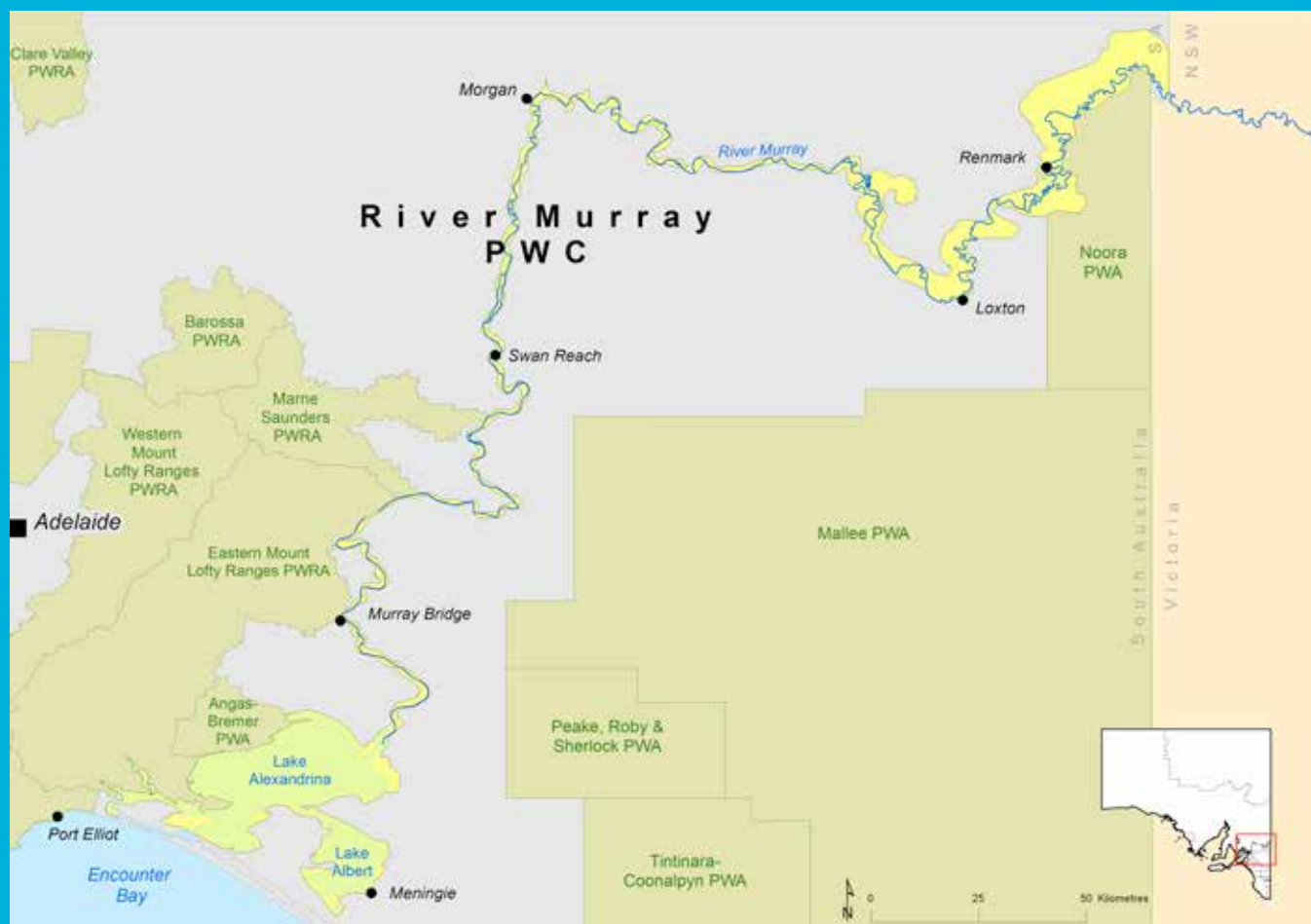
Context

The Peake, Roby and Sherlock PWA, located 150 km south-east of Adelaide, includes the confined and unconfined aquifers of the MDB found in the area. Water in these aquifers flows slowly towards the River Murray, which ultimately drains all aquifers in the basin. Townships within the area rely on reticulated supply sourced from the aquifer. Unlicensed stock and domestic water use is also extensive. Licensed water use is heavily dominated by irrigation, primarily for lucerne and olive trees. Key pressures in the area are preventing and managing unacceptable third-party impacts associated with seasonal drawdown and maintaining structural integrity and water quality in the confined aquifer.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This plan was adopted in March 2011. The plan will be reviewed and, if necessary, amended as part of the development of the SA Murray Region WRP due in 2017 under the Basin plan.
2. Does the plan include key assessments?	Yes	Key assessments were conducted during plan preparation, including clear identification of key risks to resources. The qualitative identification of ecosystems is deemed adequate given the identified GDEs are not connected to the main extractive resource. Assessment of the economic value of water is qualitative only.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan identifies the Extraction Management Zone (confined aquifer) as overused. There is a pathway to sustainable extraction in place to reduce extraction to the new modelled allocation limit set under the plan. The extraction limit is set through the clear trade-off of long-term projected salinity increases to meet current demand. Triggers are in place that require action if the monitoring threshold is breached.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan provides a detailed set of objectives, operating principles and monitoring arrangements. The objectives align with the purpose of the plan to manage the underground water resource.
5. Does the plan facilitate trade?	Yes	Trade can occur in accordance with provisions in the plan and the NRM Act 2004. Trade between management zones is justified on resource and existing user rights' protection grounds.
6. Is interception appropriately considered and integrated into the plan?	Yes	Stock and domestic extractions are included in current allocation limit assessments, and are not expected to increase significantly in the future.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	There are no significant surface water resources in the PWA, and the impact of connection to surface water resources outside the PWA is low. Recharge of the primary resource is via slow westerly lateral flows.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The only GDEs identified in the PWA are saline wetlands in the Coastal Plain region, thought to be connected to the currently unused unconfined aquifer. Requirements are implicitly met through setting allocation limits for aquifers and requiring setback distances for bores around the wetlands. The plan notes that improved understanding of GDE water requirements is needed.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	A detailed resource and allocation monitoring framework is set out under the plan. Two monitoring status updates have been released since the plan was adopted reporting no adverse trends. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan has been developed with consideration of the risk to recharge and changes in demand patterns from the drying climate anticipated in south-east Australia. The deep and confined resource is largely disconnected from rainfall variability and, as such, risk to the resource from climate variability and change is low.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved engagement with relevant stakeholders, in line with legislative requirements and a detailed consultation plan. Indigenous values have not been identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The plan was adopted in March 2011. Two monitoring status updates were released in 2012 and 2013, both reporting no adverse trends in salinity or groundwater levels.

RIVER MURRAY PRESCRIBED WATERCOURSE WATER ALLOCATION PLAN



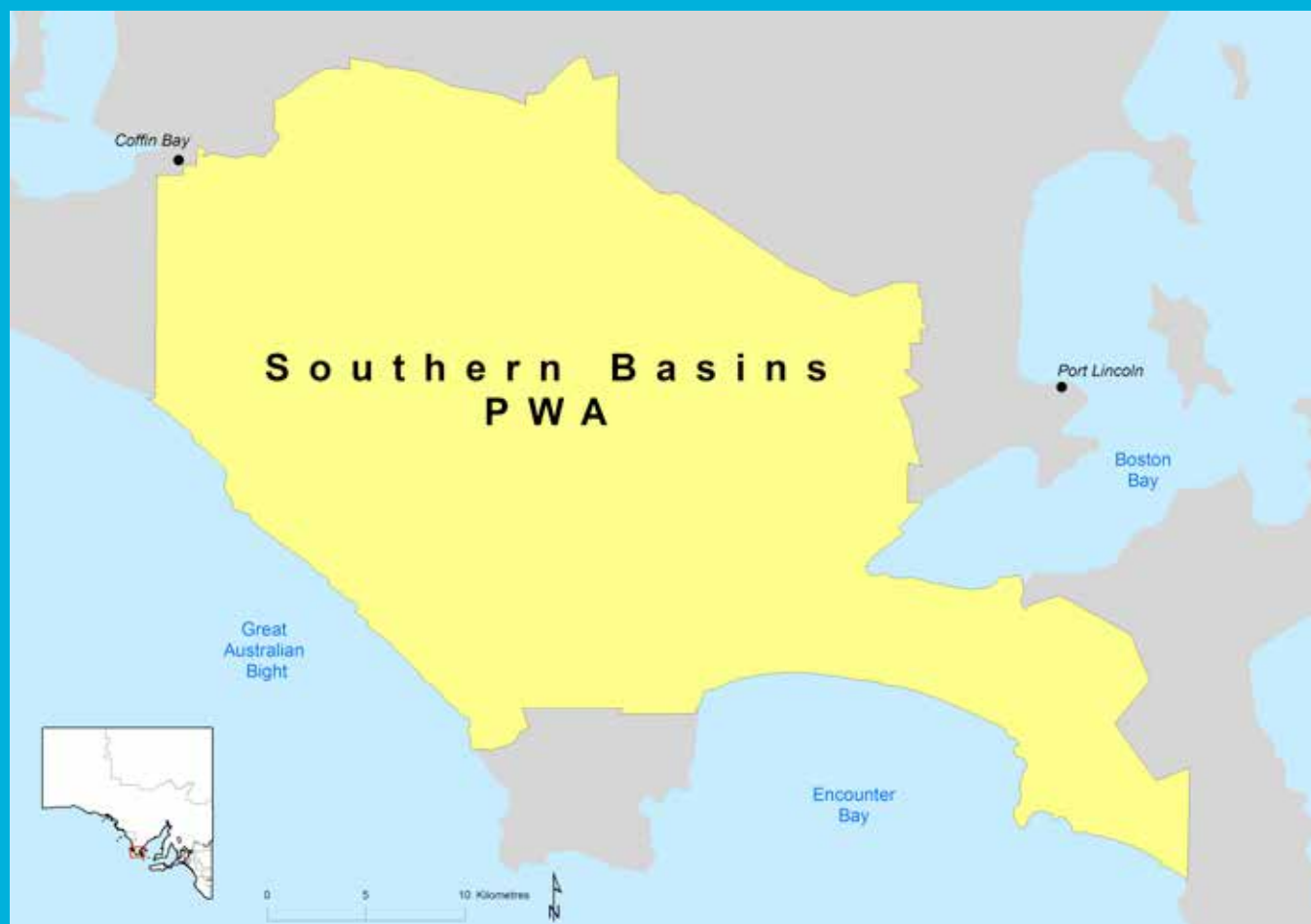
Context

The River Murray WAP covers the prescribed watercourse of the Murray River from the Victorian border to the Murray Mouth and encompasses lakes Alexandrina and Albert and portions of Currency Creek, the Finnis River and the Angas and Bremer rivers. Murray River water is the key supply for metropolitan Adelaide. Water exported from the Murray region supports irrigation and stock watering and provides town water supplies in areas across the state including the Clare Valley, Barossa Valley, Port Pirie, Whyalla, Port Augusta and Keith. Consumptive water use in the vicinity of the river is heavily dominated by irrigation, watering a wide range of horticultural crops, wine grapes and pasture. Equitable allocation of the fully allocated resource between the range of competing social, economic and environmental demands is the key driver for allocation planning.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was first adopted in 2002 and amended in 2009 and 2011. Major revision is underway to incorporate policy changes and to bring the plan into line with the Murray–Darling Basin Plan (where appropriate). A draft plan is expected to be released in 2014. Although the 2014 plan will not be fully Basin plan compliant, a further review will occur to ensure compliance by 2019 for the SA River Murray WRP.
2. Does the plan include key assessments?	To some extent	Key assessments were conducted during plan preparation. Assessment of the social and economic value of water is generally qualitative only.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The MDB cap set the total volume of water that can be diverted from the Murray River for consumptive purposes and the cap is fully allocated in South Australia. Water is shared among consumptive users through the setting of share limits for each water access entitlement class defined under the plan. Water is allocated annually based on water availability and an agreed decision framework. Although revised sustainable diversion limits have been set under the Basin plan, implementation of SDLs is not required until 2019.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Objectives set out in the plan are underpinned by principles that control water allocation, trade and use. The lack of performance indicators or specification of resource and ecosystem monitoring linked to the plan make ongoing assessment of plan performance difficult.
5. Does the plan facilitate trade?	Yes	Trade can occur under the plan and in accordance with the NRM Act 2004. River Murray entitlements are fully unbundled, providing greater market flexibility and efficiency. New trade rules are being developed in accordance with Basin plan requirements.
6. Is interception appropriately considered and integrated into the plan?	Yes	Stock and domestic demands are considered in the plan's water sharing arrangements and extractions require a water access entitlement. No other significant interception activities are identified. Interception activities in upstream interstate catchments pose a significant risk to the resource.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Evidence outside the plan notes that aquifers in the vicinity ultimately discharge to the river. As such, there is limited scope within the plan for connectivity management. The plan does consider management arrangements for applying River Murray water on the Angas Bremer PWA and site use approvals and salinity zoning to manage the movement of salt between groundwater aquifers and discharge to the channel.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets out explicit environmental requirements for each identified ecosystem group, designed to maintain the current distribution and condition of identified ecosystems. Environmental water provisions are made through wetland and environmental entitlements and underlying flows provided from the state's above-cap entitlement flows and in line with an Annual Environmental Watering Program set outside the plan.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Resource and ecosystem monitoring programs are not set out under the plan, but resource reports and online data indicate that extensive monitoring is occurring along the prescribed watercourse. Metering, compliance and enforcement provisions are specified in detail under the NRM Act 2004. Irrigation water use annual reporting has been implemented to some degree.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan has been developed with consideration of the risk to the environment and other users from periods of low rainfall and inflow. The state's MDB entitlement is set to protect ecosystems during low-flow periods. Further assessments are required to integrate responses to climate change and variability impacts into water allocation arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved engagement with stakeholders, in line with legislative requirements and a consultation plan. To date, Indigenous values have not been quantified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Plan objectives were not specifically assessed during the review of the first-generation plan. The plan review does note that current wetland and environmental allocations are not adequate to meet environmental needs. A comprehensive plan amendment is underway and revised diversion limits have been set under the Basin plan.

SOUTHERN BASINS PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



Context

The Southern Basins PWA, located in the southern Eyre Peninsula, covers the resources of the unconfined and confined aquifers found in the area. The unconfined Quaternary Bridgewater Formation Aquifer is not continuous across the area: it occurs as a series of isolated lenses and is highly sensitive to periods of low and high rainfall recharge. These lenses are the major extractive resource in the area, predominantly to supplement reticulated water supply and for minor stock and domestic use, irrigation and other industry-related activities. Preventing stress on the highly sensitive unconfined aquifer to secure reticulated water supplies is the key management driver.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was adopted in December 2000 and was reviewed in 2006. An amended plan, to be incorporated with the Musgrave PWA WAP, is being developed.
2. Does the plan include key assessments?	Yes	Key assessments were conducted during plan preparation. A range of technical investigations and scientific assessments have now been completed to support development of the amended plan.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	A conservative allocation regime is in place given the highly variable nature of the primary resource and the rapid and strong positive correlation between rainfall and recharge. The resource is protected through specified proportional allocation of recharge from the Quaternary Limestone Aquifer. A significant proportion of recharge is protected to maintain current discharge to dependent ecosystems.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Allocation, transfer and permit objectives are set, underpinned by operating principles, actions and monitoring arrangements. There is a lack of specific environmental objectives in the plan, or performance indicators to allow for ongoing assessment of objectives.
5. Does the plan facilitate trade?	Yes	Trade can occur under the plan and in accordance with the NRM Act 2004. Creation of tradeable volumetric allocations under the plan allows for expanded trading options across the area. Barriers to trade exist in the plan, but are justified on hydrogeological grounds or to protect other users and/or the environment.
6. Is interception appropriately considered and integrated into the plan?	Yes	A small proportion of the groundwater resource is used for unlicensed stock and domestic purposes. Growth in this use is not expected.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Surface water resources in the PWA are limited to ephemeral wetlands that make a minor contribution to recharge of the underground water resources. Most of the recharge for the PWA resources is via rainfall infiltration and, as such, protection of high recharge zones is essential.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan sets out the needs of identified underground water-dependent ecosystems and provides for these needs through a range of measures including volumetric extraction limits and setting of buffer zones for extractions near GDE sites. Environmental health monitoring and assessment arrangements are identified, but timing and responsibility is unclear. The plan lacks specific environmental objectives.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A resource and allocation monitoring framework is set out under the plan, although the timing and periods for environmental monitoring are not specified. Monitoring is occurring in the PWA, although reporting has been ad hoc. The first annual groundwater status report has now been released. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan has been developed with consideration of the risks to the environment and other users from periods of low rainfall and recharge to the Quaternary Limestone Aquifer and manages these risks through annual proportional allocations in line with recharge. The longer-term impacts of climate change are not considered under the plan. Potential impacts and broad adaptive management strategies are considered at the regional level.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved extensive engagement with stakeholders, managed by a community consultative committee and in line with legislative requirements. Indigenous values have not yet been identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	No explicit assessment of the plan has been conducted. Resource reports indicate the overarching plan objective for the resource has been broadly achieved, particularly due to the key allocation principle that links annual allocation to recharge. Water levels declined during the Millennium Drought but have recovered to some degree since 2009. The 2011 status report indicated a stable situation for four lenses and an adverse trend with low risk for the Lincoln Basin.

TATIARA PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



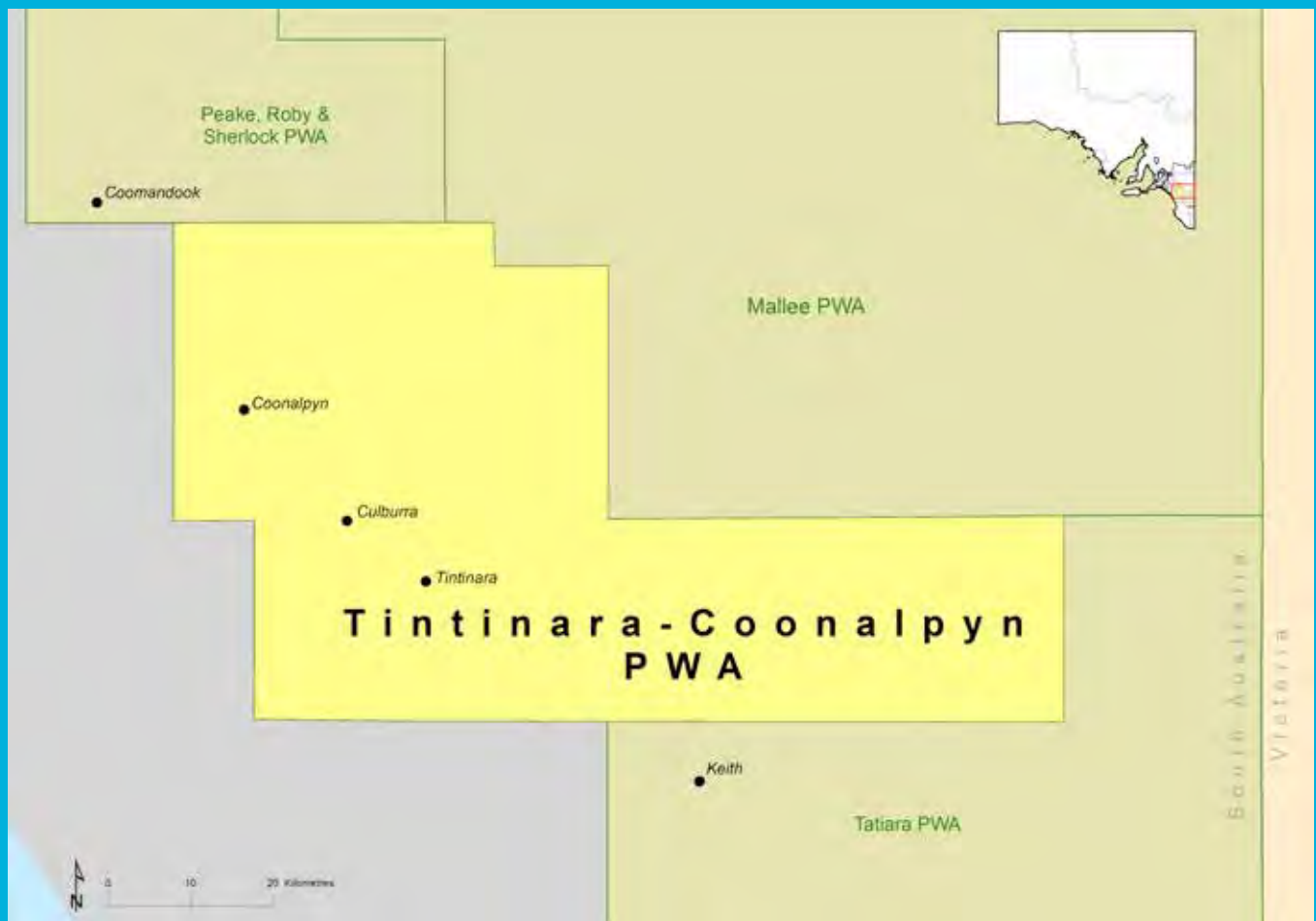
Context

The Tatiara PWA, located in the upper south-east, covers the unconfined and confined aquifers found in the area. Recharge to the unconfined aquifer occurs primarily through direct rainfall infiltration and the confined aquifer receives very limited recharge. The unconfined aquifer provides the vast majority of extraction within the plan area. Consumptive water use includes town water supplies, irrigation (primarily pasture and lucerne and oil seed), and stock and domestic uses. Heavy usage, salinisation and high levels of seasonal variability have resulted in resource stress in parts of the area. Alleviating this stress and preventing additional resource stress are the key management drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The original 2010 plan was amended in July 2012. It is subject to review by 2020.
2. Does the plan include key assessments?	To some extent	All key assessments were conducted during plan preparation. The plan notes that more detailed assessment of the needs of GDEs in the area is required. Assessment of the community and economic value of water in the area is qualitative only.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	It is noted in the plan that all management areas of the unconfined aquifer are at full allocation or overallocated and some areas show signs of overuse, both in lowering water levels and increased salinity. The plan sets revised extraction limits and an adaptive management framework for reducing allocations to Total Available Recharge by 2012. The South Australia-Victoria Border Groundwaters Agreement Review Committee was consulted and agreed on the revised limits for all Border Zones covered by the plan.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes detailed objectives, operating principles and monitoring arrangements. The measurement of progress is hindered by a lack of clear performance indicators.
5. Does the plan facilitate trade?	Yes	Trade can occur in accordance with provisions in the plan and legislation. Trade between management areas is restricted to a maximum of five years under the plan given all management areas are fully allocated.
6. Is interception appropriately considered and integrated into the plan?	Yes	Stock and domestic extractions are the main interception activity. These extractions are included in the assessment of sustainable extraction limits and are not expected to increase significantly in the future. Under recent amendments to the NRM Act 2004 (Part 5A), when section 10 of the <i>NRM (Commercial Forests) Amendment Act 2011</i> comes into operation, commercial forests in the Tatiara PWA will require a permit under the regional NRM plan for the South East.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan notes that the connection between undeveloped surface water resources and the underground water resources is low and local wetlands and streams are considered to be losing water bodies. Unconfined aquifer recharge is driven primarily by direct, generally unhindered rainfall infiltration.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets out environmental objectives and water level and quality targets and setback distances for new wells to protect identified wetlands. It is noted that improved understanding of GDE water requirements is needed. Targets are to be met through limiting the volume and location of extraction and monitoring water quality.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A detailed resource and allocation monitoring framework is set out under the plan, although evaluation and reporting of monitoring results for the amended plan are not yet due, and there is only limited reporting of monitoring under the previous plan. Compliance and enforcement provisions are specified in detail under the NRM Act 2004.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan has been developed with consideration of the risks to the resources from periods of low rainfall and recharge and includes measures and response triggers to manage these risks. While risks are broadly identified, there is limited detail on the long-term strategies for managing the effects of climate change within the plan.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved a number of informed public engagement phases with users and other identified stakeholders, in line with a consultation plan. South East NRM Board and regional staff are currently working with the South East Aboriginal Focus Group to help define cultural water to provide a basis for quantifying Indigenous water needs.
12. Have identified outcomes been achieved during the reporting period?	To some extent	No explicit assessment of plan objectives has been conducted. Resource reports indicate that the first-generation plan did not meet its key objectives to ensure that extraction remained within sustainable limits. Further to this, the recent 2010-2012 status report indicates a general trend of declining water levels and increasing salinity.

TINTINARA COONALPYN PRESCRIBED WELLS AREA WATER ALLOCATION PLAN



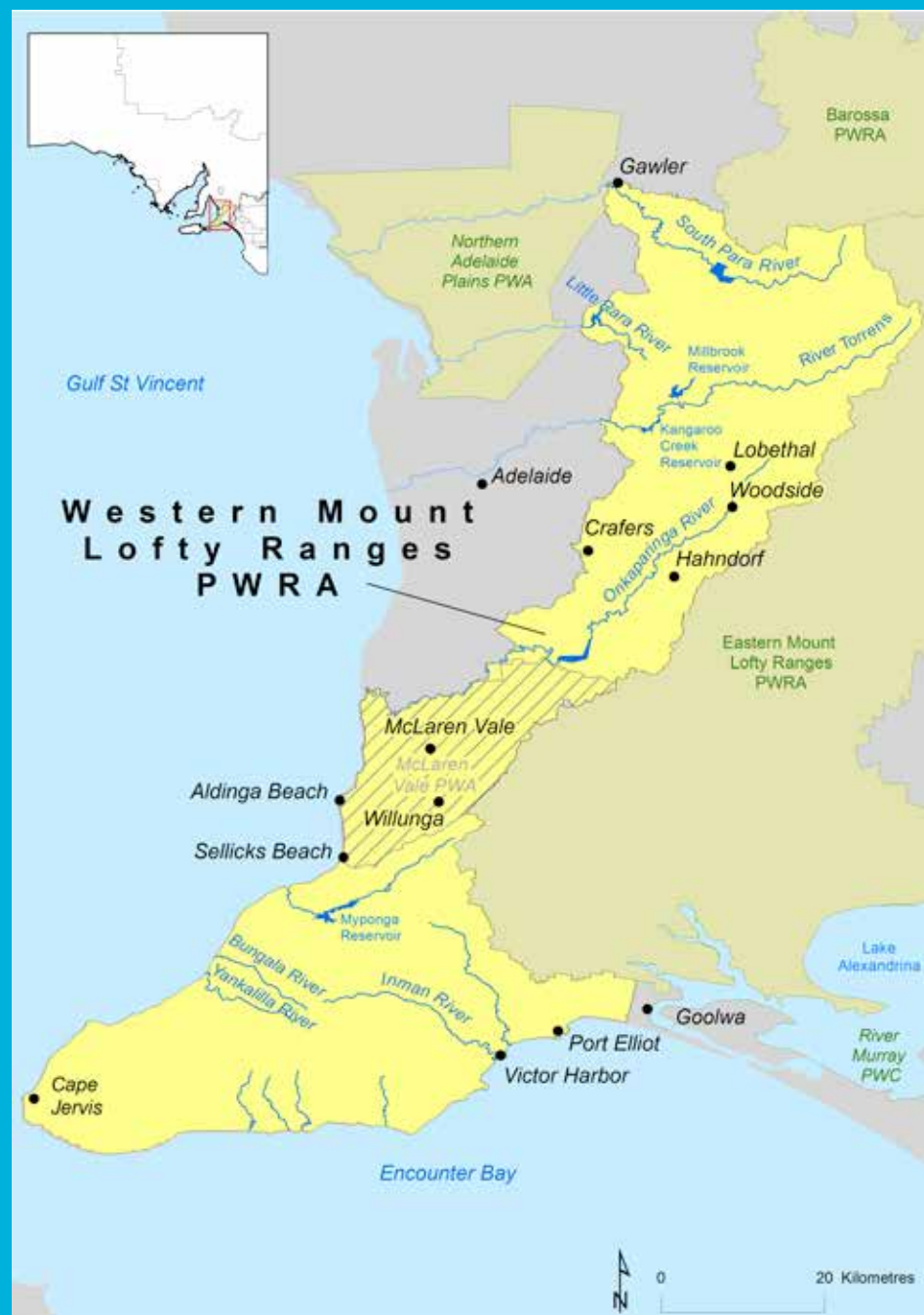
Context

The Tintinara Coonalpyn PWA, located in the state's upper south-east, covers the unconfined and confined aquifers found in the area. Extraction for irrigation, recreation and stock and domestic purposes is drawn from both main resources. Consumptive water use is heavily dominated by irrigation, primarily lucerne seed, horticulture and pasture. Increasing soil and water salinity and persistent residual drawdown in the confined aquifer have resulted in resource stress in parts of the area. Preventing and managing increasing water and soil salinity and alleviating current resource stress are the key management drivers.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was adopted in April 2012 and covers all developed groundwater resources in the prescribed area. This plan replaces the first-generation plan, which had been in effect since January 2003, with the review process starting in 2007.
2. Does the plan include key assessments?	Yes	All key assessments were conducted during plan preparation. Assessment of the economic value of water was qualitative only, with little change from the first-generation plan. Social values are not clearly articulated.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The resources are not overused, but the plan recognises areas of overallocation and has a clear pathway to reduce licensed allocations to within Target Management Levels within the plan's life. In addition, it sets criteria for allocating water within these limits.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Environmental objectives are clearly outlined in the plan and are given effect through triggers, monitoring and remediation strategies. Social and economic objectives are less clear. There are numerous objectives for different sections of the plan, but there is no logic framework to connect them or an overarching objective for the plan as a whole.
5. Does the plan facilitate trade?	Yes	Permanent and temporary trade can occur in accordance with provisions in the plan. There are restrictions on trade between management areas while overallocation is dealt with. Barriers to trade are justified to protect resource condition and maintain access to water for all users.
6. Is interception appropriately considered and integrated into the plan?	Yes	Stock and domestic use is estimated in current allocation limit assessments, and is not expected to increase significantly in the future. Under recent amendments to the NRM Act 2004 (Part 5A), when section 10 of the <i>NRM (Commercial Forests) Amendment Act 2011</i> comes into operation, commercial forests in the Tintinara Coonalpyn PWA will require a permit under the regional NRM plan for the South East. No other major interception activities are likely in the area.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan covers developed underground water resources in the PWA. There are no significant connected surface water systems in the PWA at risk from the plan's extraction regime.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets out minimum and optimum water requirements for water-dependent ecosystems identified within the plan, which reflects their importance and level of stress. It is also recognised that many of the risks to these ecosystems are from land use practices and outside the scope of the plan's extractive regime.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan includes a strategy for monitoring water levels and quality and annual reporting of water use data. Regular reporting occurred against the first-generation plan and the first annual reports for the second-generation plan have been released. Information relating to other economic and social plan objectives is not publicly available. Compliance and enforcement requirements are managed through state legislation.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Limited consideration has been given to the potential impacts of climate variability and change on the resource. The second-generation plan has built on the first plan by better acknowledging the risk posed by climate change, but specific strategies to address this risk have not been identified. Resource condition triggers and seasonal carryover provisions help manage short- and medium-term changes to recharge and demand patterns associated with climate variability.
11. Is stakeholder engagement in the planning process adequate?	Yes	The plan's development involved engagement with stakeholders, in line with legislative requirements and a consultation plan. Indigenous values have not been identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Publicly available information on the first-generation plan suggests that some objectives have been met, but overallocation issues remain. As this second-generation plan only became operational in 2012, an assessment of progress against its objectives is not possible at this time.

WESTERN MOUNT LOFTY RANGES PRESCRIBED WATER RESOURCES AREA WATER ALLOCATION PLAN



Context

The Western Mount Lofty Ranges PWRA covers the surface water, watercourses and groundwater encompassed within the area. Most surface water run-off and underground water recharge occurs in the upper reaches of the area and is highly seasonally variable. All water resources are highly developed, with the majority of extraction from the captured and stored surface water run-off. Water captured in a series of large storages across the area is the major public water supply for Adelaide. Other consumptive water use includes irrigation (primarily for wine grapes, pasture and orchards) and stock and domestic uses. Securing the public water supply and managing the impact of growth in diversion and extraction, particularly in the numbers and capacity of farm dams, are the primary management drivers for the area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	There is a plan in place and it is the first WAP for this area. It stayed in draft form for an extended period until Ministerial adoption in September 2013.
2. Does the plan include key assessments?	Yes	Key assessments have informed the plan's development, including detailed assessment of resource capacity. The plan is unclear about the extent of social and economic impacts, with little detail around the risks to the resource.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	Overuse is not explicitly recognised in the plan, but activity to cap use at existing levels and acknowledgement that some areas are under pressure suggest it is a consideration. A comprehensive extraction and diversion regime is set under the plan. It is not clear that current demand will be brought within identified extraction limits given the licence conversion process (from area-based to volumetric-based) and the process for issuing licences for pre-existing use, are conducted outside of the plan.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes separate objectives for water allocation, permits, transfers and monitoring, but there are no clear objectives for the plan as a whole, or a logical hierarchy between those included. There is some overlap so the same information can be used to measure against various objectives.
5. Does the plan facilitate trade?	To some extent	Trade is enabled within the limits of the system to maintain sustainable use. Replacing area-based authorisations with volumetric-based licences provides users with greater flexibility to manage their water more effectively through trading. The timeframes for the completion of licence issue are not clear and so there is uncertainty around when all water users will be able to trade their entitlement or allocation.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan takes account of all types of water use (metered and where not metered, estimated) and any additional take by any means, including interception, must be offset by reduced use elsewhere to maintain extraction levels within management zone limits.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan deals with all underground water, surface water and watercourse water within the prescribed area and acknowledges the linkages between the resources in its information, allocation rules and extraction limit calculations. There are general rules for buffer zones around operational wells, wetlands and third-order rivers.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental water provisions are identified and managed through the plan's extraction and diversion regime that maintains or improves ecosystems, protects low flows and groundwater discharge, limits extraction, and controls the development of water-affecting activities. Environmental water releases from major storages will be improved over time to more effectively contribute to environmental objectives in the plan. Gaps in knowledge of water quality are being addressed.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The plan includes a framework that sets out the timing and responsibilities for monitoring the capacity and condition of the resource to sustain demands, and the effectiveness of plan provisions. This framework is linked to some objectives included in the plan, but there is a lack of clarity around monitoring of social and economic risks. Compliance and enforcement requirements are managed through state legislation. The plan only became operational in 2013, so an assessment of this criterion is not possible at this time.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Plan provisions have been informed by the historical record and consideration of future risks to water resource availability. There are management triggers in the plan and available to the Minister for dealing with risks of extreme low inflows/recharge. Future plan reviews will consider long-term climate change impacts on water availability.
11. Is stakeholder engagement in the planning process adequate?	Yes	The consultation process for plan development was considerable and in line with legislative requirements. Consultation is likely to continue through NRM board operations and the broader NRM strategy. It is not clear whether Indigenous values were considered in plan development.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan only became operational in late 2013, so an assessment of this criterion is not possible at this time.

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7 Western Australia

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The context of water planning in Western Australia

Most of Western Australia's population and agricultural developments are concentrated in the coastal and south-west regions, although both the state and federal governments are interested in supporting mining, petroleum and agriculture in the north-west. Western Australia relies heavily on groundwater systems for urban water supplies, mining, industry and agriculture – more than 50 per cent of Perth's water supply comes from groundwater. Rainfall in the state's south-west has declined by about 15 per cent since the 1970s and this is changing surface water and groundwater availability. Climate projections show the drying trend will continue. Pressure on the region's surface water and groundwater resources is exacerbated by population growth and increasing demand for water for irrigation, industrial and mining developments. Water allocation planning aims to support economic development by making water available for current and future consumptive uses, while managing water resources to meet environmental and other public benefit needs.

Key legislation and policies

The *Rights in Water and Irrigation Act 1914* (the RiWI Act) and the Rights in Water and Irrigation Regulations 2000 (the Regulations) provide the legislative basis for the proclamation of water resources, administration of water entitlements and water rights, and preparation and implementation of water allocation plans.

The proclamation of groundwater and surface water areas allows the Department of Water (DoW) to manage water resources through licensing of water extraction in accordance with the RiWI Act. About 90 per cent of the state's groundwater resources are proclaimed. Proclaimed surface water areas cover only a small proportion of the state geographically (about 15 per cent), but they encompass most of the usable surface water resources in the state's developed regions. Allocation limits have been set for most proclaimed water resources, except for some fractured rock aquifers where extraction impacts are localised and some surface water systems where use and demand are low.

Water licences are the statutory tool for managing water extraction at a local scale and are issued for water taken from proclaimed water resources or from an artesian aquifer. The water licensing process is guided by non-statutory water allocation plans and a suite of strategic and operational guidelines and policies, including *The Western Australian water in mining guideline* and policies relating to environmental water, trading, metering and the management of unused water entitlements.

DoW uses a risk-based process to decide where and when to develop water allocation plans, what level of planning effort to apply, and whether new investigations are needed to inform the plans. This process considers the level of current and future demand, and whether the water resource is relevant to strategic government priorities. Current allocation planning priorities are publicly available on DoW's website.

Water allocation plans follow a consistent and transparent development process, which is set out in a publicly available guideline: *Water allocation planning in Western Australia: a guide to our process*. Plans identify water that is available for general use, unlicensed water (e.g. stock and domestic and riparian rights) and water reserved for future public water supply. Environmental water requirements are determined through key assessments. Provisions are established and implemented through the setting of allocation limits and system-specific management rules and triggers. Plans also nominate local licensing policies that are applied along with, or in addition to, statewide policies.

Proposed changes to water resource management legislation and policy

The Government of Western Australia has taken another step in reforming water resource management in the state by consulting on a proposed reform framework that seeks to streamline and modernise water management legislation, currently spread across six Acts, into a single legislative framework. The proposed changes aim to increase confidence and security for water users, simplify regulation, improve the tools available for adaptive management and secure water for future consumptive use and the environment.

The proposed framework includes provisions to:

- progressively introduce statutory water allocation plans and allocation limits and, where beneficial, introduce perpetual, tradeable water access entitlements
- improve the licensing regime that will apply to water resources without a statutory allocation plan
- allow suitable recovery mechanisms to be applied to overallocated resources where statutory water plans and allocation limits are in place
- progressively roll out metering for all users in groundwater systems and multi-user surface water systems
- consolidate environmental water provisions and rules related to water quality, including explicitly identifying environmental objectives in allocation plans and other water resource decisions
- maintain basic rights to water, which include water access by native title holders for traditional purposes as well as stock and domestic use
- update compliance and enforcement measures.

Table 5: Summary of planning instruments in Western Australia

Assessment criteria	State		Catchment	Comment
	RiWI Act and Regulations	Policies and guidelines	WAP	
1. Status of plan	yes	yes	yes	The RiWI Act and Regulations provide the statutory basis for licensing water extraction. Non-statutory allocation plans establish objectives, local policies and water availability for consumptive use in plan areas.
2. Key assessments		yes	yes	Assessments are done at the plan area level, with resource assessments often based on a broader scale. Some adjacent plan areas with similar water resources have joint assessments. Consistent with the statewide process, standard plans are developed using existing information whereas detailed plans include new and more detailed information.
3. Overuse status and pathways to sustainable water extraction	yes	yes	yes	Sustainable extraction limits, called water allocation limits, are specified in plans. Relevant water recovery mechanisms are specified in plans and statewide policy.
4. Clearly identified and measurable outcomes			yes	Broader outcomes are included in plans, supported by more detailed water resource objectives and performance indicators.
5. Facilitation of trade	yes	yes	yes	Temporary and permanent trades are enabled under the RiWI Act. Trade rules are outlined in statewide policy. Where there are local resource constraints or considerations, additional rules are specified in plans.
6. Integration of water intercepting activities		yes	yes	Consistent with statewide process, plans identify which intercepting activities have been considered when setting the allocation limit, and account for these where they are significant. Interception by plantations and off-stream dams is not licensed. Extraction for mining and petroleum activities is licensed within proclaimed areas.
7. Surface water/ groundwater connectivity			yes	Plans define the water resources to be managed by the plan, and identify any resources that are treated as connected when setting allocation limits.
8. Environmental water management arrangements		yes	yes	Environmental water needs are assessed in plan development, and inform allocation limits and management rules defined in plans. Environmental water management arrangements are also often included as part of licence conditions or operating strategies.
9. Monitoring, compliance and enforcement provisions	yes	yes	yes	Plans include provisions for monitoring and associated annual plan evaluations. Compliance and enforcement mechanisms are tied to licence conditions.
10. Planning for climate change and extremes in inflows or recharge		yes	yes	Allocation decisions are based on climate records, with newer plans including response to projected climate variability or change.
11. Stakeholder engagement	yes	yes	yes	Stakeholder engagement in plan development is set out by the RiWI Act and in the statewide water planning process. Plans are released for public comment and formal submissions are invited. Statements of response are published with finalised plans.
12. Extent to which outcomes have been achieved			yes	Plans specify review and reporting requirements. As of 2012 DoW is conducting annual internal plan evaluations with statements published every three years.

Key findings

This section provides updated commentary on the previous report card assessment for Western Australia (key findings summarised below) and includes information on significant findings for 2013. Recognition of the ongoing implementation of Western Australia's risk-based approach to planning is included in criterion 1 of the *Findings against criteria* section.

Previous findings

- *A risk-based approach to plan development*
- *Newer plans are positioned for effective adaptive management through the setting of clear objectives and strategies for monitoring and reporting*
- *Water plans show progress in accounting for climate change and variability*
- *Pathways to return overallocated systems to a sustainable extraction regime are not fixed*

2013 findings

Adaptive management continues to be supported through the setting of clear objectives and strategies for monitoring and reporting

Recent plans have been strengthened by the identification of clearer planning objectives, performance indicators, management strategies and actions. The purpose of and arrangements for monitoring, plan evaluation and review are better defined but some new plans still have objectives and performance indicators that will be difficult to assess within plan timeframes. Thirteen evaluation statements have been published, with most of these covering several years of plan implementation. Since 2012 DoW has shifted to internal annual evaluations and will only publish statements every three years unless a significant change in water availability or management arrangements occurs.

Continued progress in accounting for climate change and variability

Recent plans better quantify the potential impacts of climate change and variability, which differ across the state. Climate projections are vital in the south-west where the drying climate trend may require plans to be reviewed and replaced earlier in the planning cycle. Current legislation limits DoW's ability to flexibly manage extraction in shorter timesteps, but proposed legislative changes include provisions for variable allocations. In the south-west a trial is underway to explore how additional water above the allocation limit can be taken and stored during higher rainfall and streamflow periods.

Some water resources remain at risk from overallocation and overuse if appropriate strategies are not implemented in a timely manner

A relatively low number of resources remain at risk from overallocation, yet these are all located within the state's south-west – which is under pressure from the drying climate. Plans for overallocated and/or overused systems include strategies to manage these issues, including recovery of unused entitlements and enhanced compliance activities. However, the achievement of identified allocation and extraction regimes is still at risk from the pace of the south-west's drying climate trend and the lack of clear timeframes for recovery. Additional licensing tools are needed to effectively manage overallocation and overuse under a drying climate and this is a key consideration in Western Australia's current round of proposed legislation change.

Findings against 12 criteria

1. Status of water planning	Western Australia uses a risk-based approach to prioritise water allocation plan development, and applies planning effort based on the level of water resource development and risks to water-dependent values. Preparation of a non-statutory water allocation plan is triggered when a proclaimed water resource is at least 30 per cent allocated, water demand is projected to increase rapidly or it is identified as a government priority. A rapid increase in water demand in the state's north will require a timely response to maintain appropriate water management arrangements. DoW has advised that a watching brief is kept on the state's unproclaimed water resources to anticipate when water licensing may be needed. At present there are 22 non-statutory water allocation plans in place, including two draft plans released for public comment.
2. Do the plans include key assessments?	Key assessments are undertaken as part of water allocation plan initiation and development. They are completed to a degree of complexity that generally reflects the level of water use and risk in the plan area. Key assessments are generally made publicly available as supporting documents to the allocation plans.
3. Do the plans prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Water allocation plans aim to prevent overallocation by setting allocation limits for licensed and exempt extractions. Water resources are categorised from C1 to C4 based on the percentage of the allocation limit that has been allocated through the issuing of licensed entitlements and estimated for exempt use. Category 4 resources are overallocated; that is, the volume of entitlements is greater than 100 per cent of the available water. Water allocation plans that manage overallocated resources have provisions for reducing allocations or not increasing extraction. Mechanisms to prevent overuse and overallocation include additional licence conditions, increased licence compliance and recovery of unused entitlements. Plans do not specify a timeframe for the return of licensed entitlements to the allocation limit.
4. Do the plans include clearly identified and measurable outcomes?	More recent water allocation plans include broad outcomes and more specific water resource objectives linked to strategies, actions and monitoring arrangements. Inclusion of performance indicators in water allocation plans allows for ongoing assessment of outcomes. The measurability of water allocation plan outcomes has improved over time.
5. Do the plans facilitate trade?	Plans facilitate trade by reference to statewide trading policy and additional local trading rules specific to the plan area. Some aspects of entitlement specification and management are not fully consistent with the NWI water access entitlement framework. In particular, water licences are bundled and market participation is limited to those with legal access to land. Under proposed changes to water management legislation, there will be an option to introduce water access entitlements where this is considered appropriate, such as in water resources managed under statutory water plans.
6. Is interception appropriately considered and integrated into the plans?	Major intercepting activities are considered and accounted for in surface and groundwater modelling, as well as in the setting of allocation limits. Dewatering of mines is licensed and included in water allocation decisions. Interception through stock and domestic use is accounted for within allocation limits.
7. Do the plans include/ address surface water and groundwater connectivity as appropriate?	Surface water and groundwater plans are generally developed separately. Connectivity is evaluated during plan development and, where relevant, water allocation plans take account of surface water and groundwater linkages when setting allocation limits and developing management arrangements (including local licensing policies and monitoring). Some water resources are managed under several adjoining plans and thus a more transparent cross-boundary approach to monitoring and managing these water resources is needed.
8. Do the plans contain accountable environmental watering arrangements?	Environmental assets are identified and their water requirements determined through key assessments. All plans contain environmental objectives. Environmental water provisions are met through water that is left in the environment through setting aside a proportion of the renewable resource as an annual allocation limit, or through water that is put back in the system through dam releases or pumping to meet a specific environmental flow regime. Non-statutory plans and limitations in the effectiveness of recouping unused entitlements create some risks to the security of environmental water provisions.

9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Most water allocation plans set out a hydrological monitoring regime to be undertaken by DoW and some outline additional monitoring to be undertaken by licensees. Statewide operational policies apply to aspects of licensee monitoring (including metering). Monitoring data collected by DoW is available online, and there is evidence of monitoring of flows, water levels and water quality in some plan areas. The condition of environmental assets is generally inferred from flow and water-level data, rather than being measured directly, although some plans include monitoring of biological parameters. There is limited reporting on water use and little evidence that biological monitoring is occurring. Most water allocation plans commit to annual public reporting of plan performance. Evaluation statements have been publicly released for most finalised water allocation plans. From 2012 DoW will only undertake annual evaluations internally, with publication of statements every three years unless a significant change occurs in water availability or management arrangements. Compliance and enforcement provisions are set out in the RiWI Act and Regulations. Where local conditions dictate, additional compliance and enforcement measures are specified in plans.
10. Do the plans deal appropriately with climate change and/or variability?	Water allocation plans consider climate change and variability in the setting of allocation limits. In the state's south-west, future inflow and recharge estimates are based on recent dry decades, with some plans factoring in additional reductions based on future climate projections. In some plans water resource variability is more closely managed using flow, water level or water quality triggers. At present Western Australia is trialling arrangements for some south-west licensees to access water above the allocation limit during periods of higher rainfall and streamflow.
11. Is stakeholder engagement in the planning process adequate?	Stakeholder engagement in water planning is outlined in policy and undertaken through a variety of formats (e.g. press releases, statements of intent, method reports, newsletters and the public release of draft plans) and approaches (e.g. committees, public fora and targeted consultation). Draft plans are released for a two- to three-month public comment period and formal submissions are invited. All submissions and responses are summarised in a statement of response. For some water allocation plans information is available in several languages and formats in an attempt to engage specific stakeholders. A considered element of the water allocation plans is targeted engagement of the Indigenous community.
12. To what extent have identified outcomes been achieved during the reporting period?	Published evaluation statements show progress in plan implementation. In most cases several evaluation statements will be needed to assess whether all plan outcomes are being achieved. Water allocation plans include principles of adaptive management and can be amended if outcomes are not being achieved.

Glossary and abbreviations

Term	Acronym	Definition
Allocation limit		Annual volume of water set aside for consumptive use from a water resource.
Department of Water	DoW	State government department with responsibility for managing Western Australia's water resources.
Environmental water requirement	EWR	The water regime needed to maintain the current ecological values of water-dependent ecosystems.
Environmental water provision	EWP	The water regime resulting from the water allocation planning process, taking into account ecological, social, cultural and economic considerations.
Groundwater area	GWA	A proclaimed groundwater area.
Groundwater-dependent ecosystem	GDE	Ecosystems that are dependent on groundwater for their existence and health.
Methods report		Methods reports contain technical details about the hydrological, ecological, economic and social considerations relating to a water allocation plan.
Proclaimed area		An area declared under the <i>Rights in Water and Irrigation Act 1914</i> , requiring certain water users to have a licence to take water from a watercourse or aquifer.
<i>Rights in Water and Irrigation Act 1914</i>	RiWI Act	
Rights in Water and Irrigation Regulations 2000	Regulations	
Statement of response	SoR	Water allocation plans are sometimes accompanied by supporting documentation. Statements of response contain all the formal submissions with respect to a water allocation plan released for public comment, and delineate the DoW response to each submission.
Surface water area	SWA	A proclaimed surface water area.
Water extraction		Any take of water from a surface water or groundwater source.
Water allocation plan	WAP	The planning instrument for a defined area, setting out how much water is available for consumptive use in a proclaimed surface water or groundwater area.
Water management plan	WMP	The name given to older water allocation plans.

Planning areas

Western Australia



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5. Esperance groundwater area water management plan	411	16. Ord surface water management plan	433
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7. Gingin surface water allocation plan	415	18. Rockingham-Stakehill groundwater management plan	437
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9. Jurien groundwater management plan	419	20. Upper Collie water allocation plan	441
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ARROWSMITH GROUNDWATER ALLOCATION PLAN 2010



Context

The *Arrowsmith groundwater allocation plan* covers the northern-most extent of the Northern Perth Basin, centred 300 km north of Perth. The plan covers the unconfined and confined aquifers found in the area. Mining, public water supply and agricultural production are the main water uses, with most extraction from the widely distributed confined aquifers. Both the increasing competition for water, including the growing demand for public supply in coastal areas, and the complexity of the distributed groundwater systems drives the need for planning.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since August 2010 and is due for review after 2017.
2. Does the plan include key assessments?	To some extent	The plan is based on limited existing assessments. More detailed assessments are planned to inform adaptive management and development of the next plan.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan aims to prevent overallocation by restricting entitlements to the limit set under the plan, or by requiring local hydrogeological investigation in areas where allocation limits are estimated. The allocation limits are generally set to provide for consumptive use and maintain the resource and dependent ecosystems at a low level of risk. Water-level triggers are in place in highly used areas.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan sets out resource and management objectives underpinned by relevant strategies and policies. Inclusion of performance indicators allows for the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Unlicensed stock and domestic use is recognised in the plan and allowed for in the allocation limit. Mining below the watertable requires a licensed allocation.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises groundwater contributions to connected surface water features and the importance of maintaining the saltwater interface and sets allocation limits and local licensing rules to maintain these connections.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan sets out broad environmental objectives. Groundwater-dependent environmental assets are not clearly identified and environmental water needs are only discussed in general terms. General provisions are made through quarantining a proportion of recharge from consumptive allocation. Minimum water-level requirements and triggers to protect discharge to groundwater-dependent ecosystems (GDEs) are specified in high-use areas. No specific ecosystem monitoring program is specified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. There is evidence that some monitoring is occurring, for example of groundwater levels and salinity, but annual reporting commitments have not been met. One evaluation statement has been published that includes a summary of monitoring results for the first year of the plan's implementation. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The impacts of climate variability on the resources were considered in the review of allocation limits and current arrangements were considered appropriate. Climate change impacts are not yet considered.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were engaged throughout the plan's development, including identification of Indigenous values. A statement of response to stakeholder submissions is published.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is evidence of progress to achieve plan outcomes, with licensed use within allocation limits in all resources, but declining rainfall and extraction are impacting on some resources.

BROOME

GROUNDWATER MANAGEMENT PLAN 1994

Context

The *Broome groundwater management plan* area is located in the Kimberley region in the state's far north-west. The Kimberley has a tropical climate dominated by summer rainfall and groundwater recharge. The plan covers use from the unconfined and confined aquifers of the Broome area. Groundwater, predominantly drawn from the unconfined aquifer, is the only substantial potable water resource available to meet local town and industry needs. Demand for water has grown with increasing population. The plan seeks to protect the potable resource from intrusion of poorer quality groundwater and sea water.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since September 1994. Two unpublished reviews were undertaken in 2008 and 2013. Following on from the latest review, DoW advises that allocation limit changes have been put in place and will be communicated to stakeholders.
2. Does the plan include key assessments?	Yes	The key assessments undertaken are limited, but adequate for water use and development in the plan area.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan prevents overallocation by restricting extraction to the limit set under the plan. There are triggers relating to salinity levels, although specific management responses are absent. Allocation limits and development controls are set to maintain water levels and quality to prevent saltwater intrusion.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Plan objectives have not been clearly identified, although implicit objectives can be inferred from management actions detailed in the plan. The lack of specific objectives and related performance indicators inhibits the ongoing assessment of plan performance.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Unlicensed stock and domestic use is included in the plan and allowed for in the allocation limit.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Maintaining aquifer throughflow to prevent saltwater intrusion is one of the plan's central considerations. There are no major surface water features in the area.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Identified GDEs are spatially limited in the plan area. The plan seeks to maintain water levels that support GDEs through setting allocation limits, putting localised restrictions on well development and extraction, and reviewing available groundwater-level data.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring program is set out in the plan and has recently been reviewed. There is some evidence that monitoring is occurring, for example monitoring of groundwater levels, but there is no commitment to public reporting of plan performance. Compliance and enforcement provisions are specified in legislation.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan identifies the impact of high- and low-rainfall years on recharge and takes this into account in setting allocation limits.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were engaged throughout the plan's development and Indigenous values identified.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is no specific plan reporting and limited published evidence of plan performance. The 2008 internal plan review concluded that management arrangements under the plan were appropriate. A recent hydrogeological review noted that while fresh water was still available in some areas, the sustainable limits of extraction were being reached in others. As a result allocation limits have been amended.

CARNARVON ARTESIAN BASIN WATER MANAGEMENT PLAN 2007



Context

The *Carnarvon Artesian Basin water management plan* area is located in the state's arid, remote mid-west. The plan covers the confined Birdrong aquifer which extends from the Murchison River north to the Fortescue River. Artesian conditions exist over more than 20 per cent of the aquifer. Groundwater is used for drinking water, mining and industry needs and stock water for the surrounding pastoral industry. Maintaining artesian pressure and protecting the critical potable water supply is the plan's primary focus.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since December 2007 and was due for review by 2012. It was reviewed in 2011 and will remain in place at least until the next annual evaluation. Whether the plan needs replacing will be considered each year.
2. Does the plan include key assessments?	Yes	The key assessments undertaken are adequate given the nature of the resource and current water development in the plan area.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. Overallocation is prevented through the setting of nominal allocation limits (modelled to maintain minimum artesian pressure) and/or the requirement for development of impact assessments for new licence applications. Some previously free-flowing bores have been capped or refitted under state and federal government programs.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan sets out resource and management objectives, underpinned by a range of relevant management principles and actions. There is a lack of specific performance indicators in the plan to allow for ongoing assessment of plan objectives. Performance indicators were formulated in the first plan evaluation statement.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing use rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Stock and domestic extractions are included in allocation limits and licensed. Under legislation, taking of all water from an artesian well requires a licence, regardless of use.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Not applicable	This plan manages a deep, confined aquifer that is not connected with other groundwater or surface water systems.
8. Does the plan contain accountable environmental watering arrangements?	Not applicable	No GDEs are identified within the plan area. There are no areas of aquifer discharge to the surface, and water levels are too deep to support terrestrial vegetation.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. There is evidence that monitoring of artesian pressure is occurring, but biennial reporting commitments have not been met (only two plan evaluations have been published). Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The deep and confined resource is largely disconnected from rainfall variability. As such, risk to the resource from climate variability and change is low. Extraction impacts are managed through maintaining artesian pressure heads.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were engaged throughout the plan's development. A statement of response to stakeholder issues was published. No water-dependent cultural values were identified. The ongoing involvement of the Carnarvon Artesian Basin advisory group in plan implementation is evident.
12. Have identified outcomes been achieved during the reporting period?	Yes	The main plan objective is to maintain artesian pressure heads. There is evidence provided in plan evaluations that this is being achieved.

COCKBURN GROUNDWATER AREA WATER MANAGEMENT PLAN 2007



Context

The *Cockburn groundwater area water management plan* area is located 30 km south of Perth. The plan covers the unconfined and confined aquifers found in the area. Current water use includes that for horticulture, industry and domestic supply. Groundwater-dependent wetlands with national and international protection status are located in the area. Water-level declines in the most-used unconfined aquifer have occurred in recent years as recharge has decreased because of the drying climate and private extraction has increased. The need for planning is driven by increasing competition between existing horticultural use, and urban and industrial expansion in the area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since December 2007. It was reviewed in 2012 and will remain in place at least until the next annual evaluation.
2. Does the plan include key assessments?	Yes	All key assessments were undertaken in the plan's development. Current social and economic demands have been documented.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. Overallocation is prevented by setting subarea allocation limits designed to maintain the resource and dependent ecosystems at a low level of risk. One subarea is overallocated and at risk if unused licences are activated. The plan seeks to prevent overallocation through licence management, including recovery of unused entitlements in overallocated areas. However, the plan does not specify a timeframe for the return of allocations to the identified limit.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plans set out resource and management objectives underpinned by a range of relevant management principles and actions. The lack of specific performance indicators inhibits the ongoing assessment of plan performance.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing use rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Estimated unlicensed stock and domestic use is included in plan allocation limits.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Groundwater discharges from the unconfined aquifer to the coastal lake and many drains and wetlands. The plan sets allocation limits and development conditions to maintain these connections.
8. Does the plan contain accountable environmental watering arrangements?	Yes	There are no specific environmental objectives set out in the plan, although protection of GDEs is explicit in plan considerations and policies. Groundwater-dependent environmental assets are identified, and environmental requirements are set out. Environmental water provisions are implemented through limiting extraction to maintain water levels and through local development controls that seek to protect water levels and quality.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. A review of the monitoring program is underway. There is evidence that some monitoring is occurring (e.g. groundwater levels), but annual reporting commitments have not been met. One evaluation statement has been published that includes a summary of monitoring results since the plan's release. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan responds to declining groundwater levels resulting from reduced rainfall recharge by reviewing and adjusting allocation limits. The potential impacts of future climate change have not been reflected in plan provisions.
11. Is stakeholder engagement in the planning process adequate?	No	There is no evidence of stakeholder engagement during the planning process.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Evidence is provided in the published evaluation statement that plan objectives have been met to some extent (e.g. the Yarragadee aquifer was recovered to full allocation), but also that regional water levels in the Yarragadee and Leederville aquifers are declining. The evaluation statement indicates that this is linked to cross-boundary impacts and that a regional management approach is required – but it does not provide any further detail.

ESPERANCE GROUNDWATER AREA WATER MANAGEMENT PLAN 2007



Context

The *Esperance groundwater area water management plan* area is located in the state's far south-east. The plan covers use from the unconfined and confined aquifers of the region. Groundwater from the unconfined aquifer is the only substantial potable water resource available to meet local town and industry needs. Demand for water has grown with increasing population and the expansion of mining and aquaculture. The plan seeks to protect the scarce potable resource from overallocation and intrusion of poorer quality groundwater and sea water.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since May 2007. It was reviewed in 2012 and will remain in place at least until the next annual evaluation.
2. Does the plan include key assessments?	Yes	Assessments were undertaken during the plan's development and were appropriate to the water management context of the plan area.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan aims to prevent overallocation and associated resource degradation (from saltwater intrusion) by setting allocation limits to a percentage of the estimated rainfall recharge in each subarea. A more thorough investigation of groundwater resources is triggered when use approaches the allocation limit.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan sets out objectives underpinned by a range of relevant management strategies, policies and actions. The lack of specific performance indicators inhibits the ongoing assessment of plan performance.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing use rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Estimated unlicensed stock and domestic use is included in plan allocation limits.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Groundwater discharge to wetlands is identified in the plan. There are no significant surface water resources in the area.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	There are no specific environmental objectives set out in the plan, although protection of GDEs is explicit in plan considerations and policies. Major GDEs are identified, including dependent Ramsar-listed wetlands. Environmental water requirements are discussed but not quantified in the plan. Demand triggers are in place which require assessment of specific environmental water requirements and provisions.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring program is set out in the plan, which has been adapted as new information has become available. The plan has no commitment to public reporting. One plan evaluation has been released – covering the period from the plan's release to 2011 – and provides evidence that some monitoring is occurring (e.g. groundwater levels and salinity by licensees). Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The allocation limits set under the plan are linked to average rainfall recharge. The potential impacts of climate change have not been reflected in plan provisions.
11. Is stakeholder engagement in the planning process adequate?	No	There is no documented evidence of stakeholder engagement being undertaken during the planning process.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is evidence provided in the published evaluation statement that plan objectives have been met to some extent and water levels and quality in some areas are stable, however the trend of coastal saltwater intrusion continues.

GINGIN GROUNDWATER ALLOCATION PLAN 2013

Context

The *Gingin groundwater allocation plan* updates and replaces an interim subregional allocation strategy released in 2002. This assessment is based on the replacement plan unless specific reference is made to the interim allocation strategy. The plan area is in the state's south-west about 90 km north of Perth. The plan applies to unconfined and confined aquifers in the area which are mostly used for irrigated agriculture and horticulture. The plan includes water reserved for future public water supply. The plan was developed in response to the south-west's drying climate trend and increases in demand for groundwater. The plan aims to protect the reliability of current entitlements while providing for GDEs, including summer baseflows in Gingin Brook and the Moore River. These environmental assets are conjunctively managed between the groundwater plan and the *Gingin surface water allocation plan*.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A plan has been in place since 2002. A replacement plan was released for public comment in August 2013 and is due to be finalised in 2014. The plan is due for review in 2020.
2. Does the plan include key assessments?	Yes	Key assessments for the plan are based on existing information, commensurate with the management response for a medium-demand area. More detailed assessments may be required to support planning arrangements in high-risk water resources. The plan commits to further assessments as funding becomes available.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	Allocation limits in some subareas have been reduced under this plan. Although overuse is not identified in the plan, several resources are overallocated. Recovery of these resources will be through recouping of unused water entitlements and new trading rules to move extraction from areas where the risks from overallocation are the greatest. Overallocation in the rest of the plan area is prevented through revised allocation limits. The plan does not specify a timeframe for the recovery of entitlements to allocation limits.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Plan outcomes and objectives are clearly stated and linked to plan actions and monitoring arrangements. Inclusion of performance indicators allows for the ongoing assessment of outcomes.
5. Does the plan facilitate trade?	To some extent	Allocation limits are set for all resources. Trade rules are set out in statewide policy, with local rules included in the plan to encourage trade away from critical water-dependent ecosystems. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Estimated stock and domestic use is included in allocation limits where relevant. It is not clear whether significant future growth in mining and petroleum activities is likely within the plan area, nevertheless water extraction for these industries is licensed and will therefore be managed within allocation limits.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan identifies areas of connectivity that are environmentally significant, particularly those that are critical to maintaining summer baseflows in key watercourses. The plan aims to protect these assets through allocation limits that account for connectivity, local licensing policies and conjunctive management arrangements in the associated surface water plan.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Water-dependent environmental assets are identified and allocation limits have been set to account for the proportion of recharge to be left in the system to protect environmental values. More detailed environmental water provisions and management arrangements may be necessary to protect assets in high-risk resources.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	No clear monitoring program was set out in the 2002 plan and there was no commitment to public reporting, although there is evidence of ongoing groundwater-level monitoring. The replacement plan significantly improves the clarity and purpose of monitoring and reporting arrangements. Compliance and enforcement provisions are specified in legislation and there are additional requirements in the new plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The drying climate is a driver behind development of the new plan and a key consideration in the revision of allocation limits. More detailed arrangements to manage future climate variability may be necessary in high-risk water resources.
11. Is stakeholder engagement in the planning process adequate?	To some extent	There is clear evidence that stakeholders have been involved in development of the updated plan, although a key supporting document was made available on request only. It is unclear whether Indigenous stakeholders have been consulted.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The 2002 plan did not have clear objectives and there is no publicly available evaluation. There is some qualitative evidence of objectives having been partially met, but at the same time that baseflows in Gingin Brook and the Moore River (supported by groundwater discharge) have diminished. The replacement plan includes a clear commitment to regular evaluations and periodic publication of evaluation statements.

GINGIN SURFACE WATER ALLOCATION PLAN 2011



Context

The *Gingin surface water allocation plan* area is located 70 km north of Perth. Surface water resources in the area are characterised by a network of unregulated streams. Water is pumped directly from watercourses to support horticultural and agricultural uses. There has been a marked reduction in rainfall and inflows during the past few decades, particularly in summer when demand is greatest. As a result, water resources within the plan area are fully or overallocated. Equitable re-allocation of the diminishing resources is the plan's primary focus.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This plan has been in place since April 2011 and is due for review by 2016.
2. Does the plan include key assessments?	Yes	All key assessments were undertaken during the plan's development, including scenario-based risk assessment.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. Water resources in the plan area are fully allocated or overallocated due to decreased streamflows under a drying climate. Allocation limits have been reduced under the plan as a first step to recovery. Recouping of unused water entitlements is the primary mechanism to return licensed entitlements to the limit, but no timeframe for achieving this is specified.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Broad resource and management objectives are stated. These are underpinned by a range of relevant management strategies, policies and actions. Inclusion of performance indicators in the plan allows for the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits are set for all resources. Trade rules are set out in statewide policy, with local rules included in the plan to encourage trade away from critical water-dependent ecosystems. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Unlicensed stock and domestic use is identified as the major intercepting activity in this area. Current and future demand has been estimated and taken into account in setting allocation limits.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Groundwater discharge provides stream baseflow during summer and is anticipated to decline under the projected drying climate. Groundwater recharge and discharge is accounted for in the determination of allocation limits.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Broad environmental objectives are set out in the plan. Ecologically critical low flows are protected through specific low-flow thresholds below which extraction is not permitted. Under the plan, recovered entitlements will be returned to the system for environmental water. The plan notes the need for a more comprehensive investigation of environmental water needs.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. There is evidence that some monitoring is occurring (e.g. metering of licensed water use and streamflow), but annual reporting commitments have not been met. One evaluation statement has been published that includes a summary of monitoring results for the first 18 months of plan implementation. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Declining trends in rainfall, streamflow and groundwater discharge are expected to have an increasing impact on user access, particularly during low-flow periods. These declining trends have been used to set new allocation limits. Seasonal variability is managed through low-flow extraction restrictions.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement in plan development has been comprehensive, including consideration of downstream impacts on other users. A statement of response to stakeholder submissions is published.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is evidence the plan is being implemented and that its outcomes are being partially met, in particular the recovery of unused water entitlements and the update of low-flow thresholds. Changes have been made to the plan as a result of observed and projected declines in rainfall and streamflow. It is recognised that adaptive management will be needed to continue to meet plan outcomes.

GNANGARA GROUNDWATER AREAS ALLOCATION PLAN 2009



Context

The *Gnangara groundwater areas allocation plan* area covers the northern Perth metropolitan area, and encompasses the unconfined and confined aquifers found in the region. The Gnangara groundwater resources are a major source for Perth's public water supply, as well as for horticulture and other industries and maintaining wetlands that are socially and ecologically important. During the past decade groundwater levels have declined due to reduced recharge from lower rainfall, increased extraction and land use change. The drying climate, ongoing heavy use and marked decline of this critical water source are the central management drivers in this area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since 2009 and was reviewed in 2012. A revised plan is due for release in 2016.
2. Does the plan include key assessments?	Yes	All key assessments were undertaken during the plan's development.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan identifies several overused water resources. It sets revised allocation limits (resulting in some resources becoming overallocated) and proposes mechanisms for returning to more sustainable levels of extraction, including the recovery of unused entitlements. Even with new drinking water sources now online – which have resulted in a significant reduction in groundwater use – the recent evaluation showed a new plan is needed to continue the move towards a more sustainable extraction regime. The evaluation also recognises that several planning cycles will be needed for recovery.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan sets out broad objectives linked to management strategies, local licensing rules and monitoring arrangements. Its performance indicators allow for ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Estimated unlicensed domestic and garden use is included in plan allocation limits.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Water from the unconfined aquifer discharges to wetlands and streams across the area. The plan seeks to protect surface water systems from the impacts of groundwater extraction through allocation limits and development conditions near some features.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets out environmental objectives and identifies groundwater-dependent environmental assets. Environmental water provisions are set through water-level criteria at representative sites. GDEs are also protected through restrictions on extraction near sensitive sites. These provisions are formalised under environmental protection legislation. Ecosystem monitoring against criteria is reported to the Office of the Environmental Protection Authority. These reports are published on DoW's website.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. Monitoring is being undertaken in accordance with the plan but annual reporting commitments have not been met. One evaluation statement has been published that includes a summary of monitoring results since the plan's release. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan takes drying climate trends into account in setting allocation limits. Development of alternative supplies helps meet increasing water demand and manage variability in the area.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were engaged throughout the plan's development, including identification of Indigenous values. A statement of response to stakeholder submissions has been published.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The published evaluation statement demonstrates that while actions to implement the plan are being taken, some plan outcomes are not being met or are not being met in full. Changes have been made to improve the current plan's implementation and a new plan is being developed. The public release of further evaluation statements will be important for transparency and accountability of management arrangements until the new plan is released in 2016.

JURIEN GROUNDWATER ALLOCATION PLAN 2010



Context

The *Jurien groundwater allocation plan* area is located in the Northern Perth Basin, 200 km north of Perth. The plan covers the unconfined and confined aquifers found in the area. Public water supply, horticulture, agriculture and mining are the main water uses. Both the increasing competition for water, including the growing demand for public water supply in coastal areas, and the complexity of the distributed groundwater systems drive the need for planning.

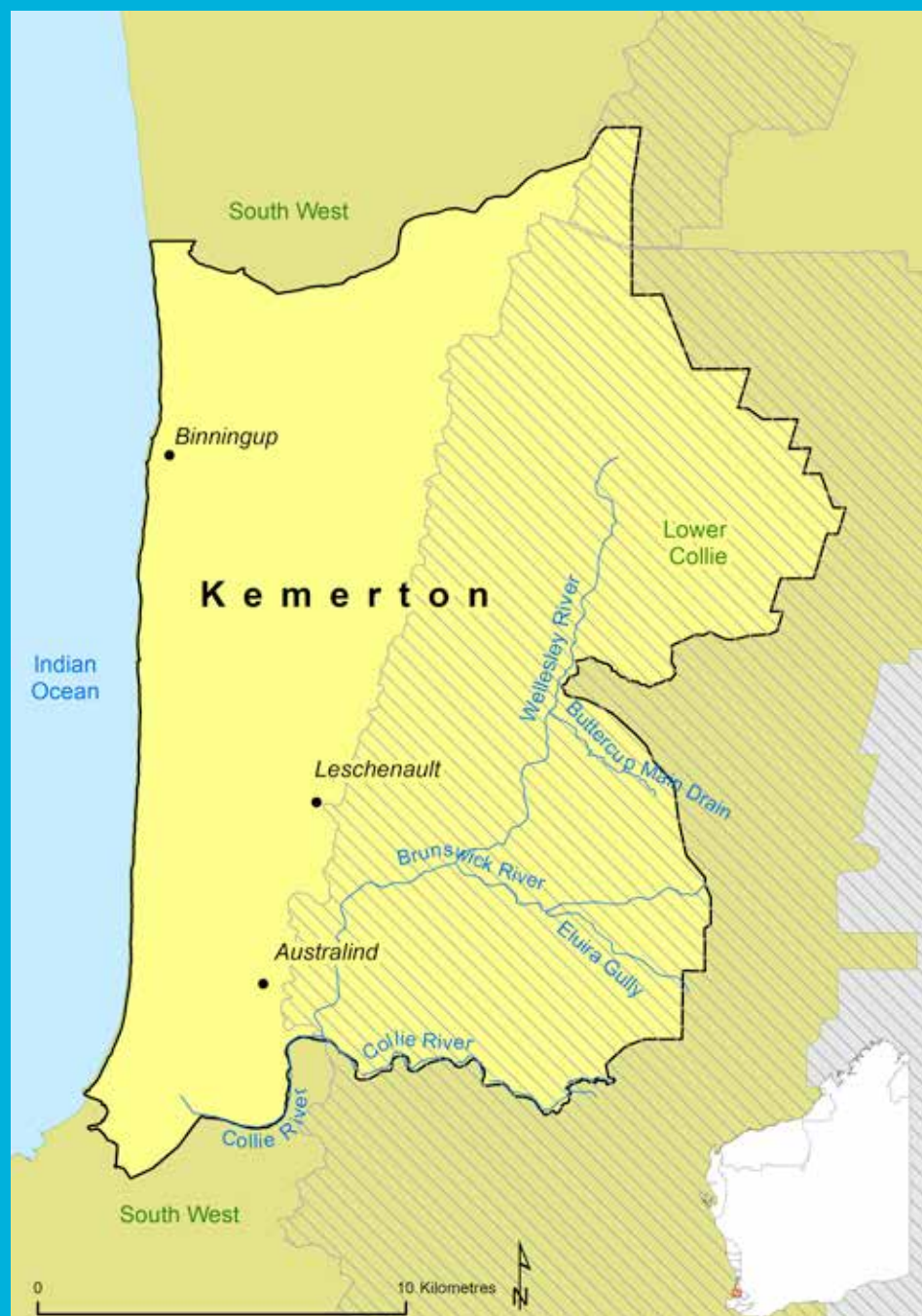
Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since August 2010 and is due for review after 2017.
2. Does the plan include key assessments?	Yes	Hydrological and environmental assessments have been undertaken appropriate to the level of resource development. The plan notes the need to conduct more rigorous social and economic assessments.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan aims to prevent overallocation by restricting allocations to the limit set under the plan, or by a requirement for local hydrogeological investigation in areas where allocation limits are estimated.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan sets out objectives underpinned by a range of relevant management strategies, policies and monitoring arrangements. Inclusion of performance indicators allows for the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Unlicensed stock and domestic use is included in the plan and allowed for in the allocation limit. Mining below the watertable requires a licensed allocation.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan sets out minimum water-level requirements and triggers to protect baseflow in connected surface water features (in high-use areas), although it does not specifically identify areas of connectivity in the plan or plan assessments.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan sets out broad environmental objectives. It does not clearly identify groundwater-dependent environmental assets and environmental water needs are only discussed in general terms. General provisions are made through quarantining a proportion of recharge from consumptive allocation, while minimum water-level requirements and triggers to protect discharge to GDEs are specified in high-use areas.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. There is evidence that some monitoring is occurring (e.g. groundwater levels), but annual reporting commitments have not been met. One evaluation statement has been published that includes a summary of monitoring results since the plan's release. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The impacts of climate variability on the resource were considered in a review of the plan's allocation limits and current arrangements were considered appropriate. The plan indicates climate change impacts will be considered at next plan review.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were engaged throughout development of the plan. A statement of response to stakeholder submissions is published.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is evidence of progress towards achieving plan outcomes, namely due to licensed use falling within allocation limits in all resources. On the other hand, extraction and declining rainfall are affecting water levels in some areas.

KEMERTON GROUNDWATER SUBAREAS WATER MANAGEMENT PLAN 2007

Context

The *Kemerton groundwater subareas water management plan* area is located north of Bunbury on the state's south-west coast. The plan covers the unconfined and confined aquifers found in the area. Current use includes agriculture (stock), horticulture, mining and heavy industry. The area has been designated a strategic industrial site. Sustainable development of water supplies to support economic development in the designated Kemerton Industrial Park is the plan's central focus.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since January 2007 and is due for review by 2014.
2. Does the plan include key assessments?	Yes	Assessments have been undertaken appropriate to the level of resource development. The economic assessment is limited to broad discussion of demand.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. It aims to prevent overallocation by restricting entitlements to the limit set under the plan. The allocation limits are generally set to provide for consumptive use while maintaining the resource and dependent ecosystems at a low level of risk. Actions such as increased meter compliance and reducing allocation limits are triggered if groundwater levels decline.
4. Does the plan include clearly identified and measurable outcomes?	No	The plan does not have clearly identified objectives, although objectives are implicit in plan strategies and policies. Performance indicators to guide measurement of plan performance are absent.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Unlicensed stock and domestic use is included in the plan and allowed for in the allocation limit. Mining below the watertable requires a licence.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Groundwater/surface water connectivity has been identified and modelled in the area. The plan sets out minimum water-level requirements and triggers to protect water levels for connected surface water features.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Several high-conservation value groundwater-dependent wetlands and areas of terrestrial vegetation are identified, although specific requirements are not assessed. Broad environmental water needs are accounted for in setting allocation limits and provided through the setting of critical water-level thresholds for ecosystems.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. There is evidence that some monitoring is occurring (e.g. groundwater levels), but biennial reporting commitments have not been met. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Current climate and variability trends were accounted for in the hydrological assessment and considered in the setting of allocation limits. Potential climate change impacts on the resource have not yet been included.
11. Is stakeholder engagement in the planning process adequate?	No	There is no evidence of stakeholder engagement.
12. Have identified outcomes been achieved during the reporting period?	Unable to assess	DoW has advised that an internal evaluation has been completed but no public evaluation statement has been published to date.

LA GRANGE

GROUNDWATER ALLOCATION PLAN 2010



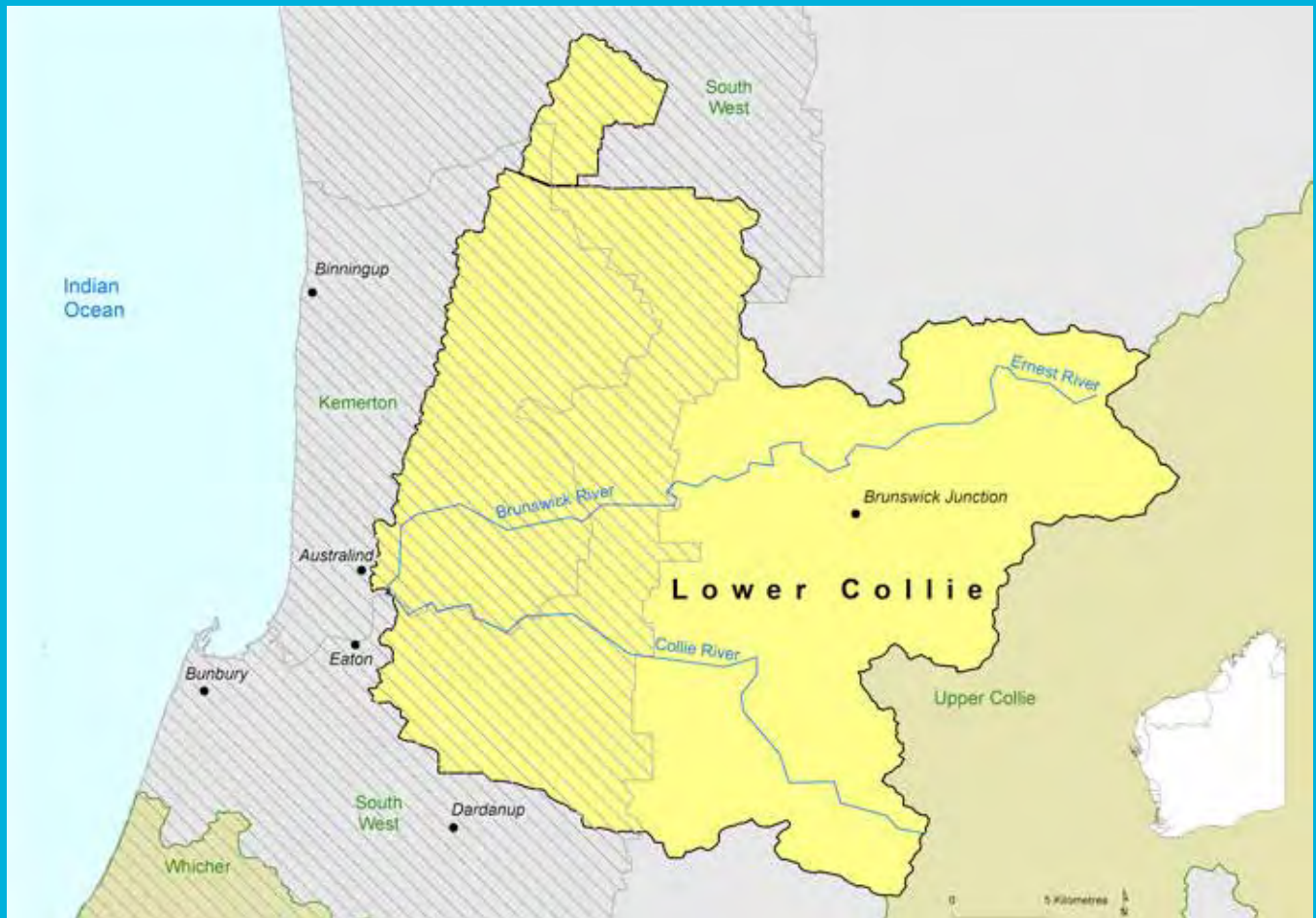
Context

The *La Grange groundwater allocation plan* area is located in the Kimberley region in the state's far north-west. The Kimberley has a tropical climate dominated by summer rainfall and groundwater recharge. The plan covers groundwater from the unconfined Broome Sandstone aquifer, which is the major source of water in this area. Current water use includes that for horticulture, pasture, tourism, mining, stock watering and domestic supply. Environmentally and culturally significant coastal and inland wetlands and springs are found in the area including three Ramsar-listed sites. An unrealised proposal to develop the resource for cotton irrigation was the trigger for this plan's development. Interest in developing petroleum and horticulture continues.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since February 2010. The plan does not identify a date for review.
2. Does the plan include key assessments?	Yes	Key assessments adequate for the current level of water resource development in the plan area have been undertaken. Ecological and associated cultural values have been identified, although detailed environmental water requirements have not yet been quantified.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan prevents overallocation by setting subarea allocation limits and management triggers linked to increasing demand. The allocation limits are based on estimated annual recharge and aim to maintain current resource condition and meet the needs of identified ecological, cultural and social water-dependent values.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan sets out resource condition and management objectives and details strategies and actions to achieve these objectives. Lack of specific performance indicators and monitoring inhibits ongoing assessment of plan objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits are set under the plan. Trade rules are set out in statewide policy and a local licensing rule prevents trading between subareas to minimise large-scale concentrated extraction. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land. Both the low level of resource development and low current demand for trading are noted.
6. Is interception appropriately considered and integrated into the plan?	Yes	Stock and domestic water use is included in allocation limits. Mining is noted as a possible future water use; mining below the watertable requires a licence.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Allocation limits and management provisions set under the plan seek to maintain the current aquifer throughflow and discharge regime to protect against seawater intrusion and maintain discharge to springs and wetlands.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan sets out environmental objectives and discusses environmental water needs (understood to a limited extent at present). Extraction limits maintain <i>in situ</i> water and local development requirements around GDEs seek to protect water levels and discharge. Monitoring arrangements for GDEs are not specified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan sets out a monitoring and reporting framework, although the monitoring program lacks detail. Licensees are required to undertake monitoring and there is evidence that some is occurring. The plan states a commitment to annual reporting and two evaluation statements have been published to date covering the period since the plan's release. Compliance and enforcement provisions are specified in legislation.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Climate variability is addressed by considering past extremes of recharge in setting allocation limits. The plan notes the intention to use climate change projections in future versions of the plan.
11. Is stakeholder engagement in the planning process adequate?	Yes	The stakeholder engagement undertaken was adequate for this plan and the level of water resource development. Indigenous engagement included targeted meetings and workshops combined with several other consultation mechanisms. A statement of response to stakeholder submissions was published. There is evidence of ongoing stakeholder involvement in the plan's implementation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is qualitative evidence that plan outcomes are being achieved – partly due to low water use relative to the allocation limits – however the lack of measurable performance indicators is a barrier to assessing progress towards plan outcomes.

LOWER COLLIE SURFACE WATER ALLOCATION PLAN 2011



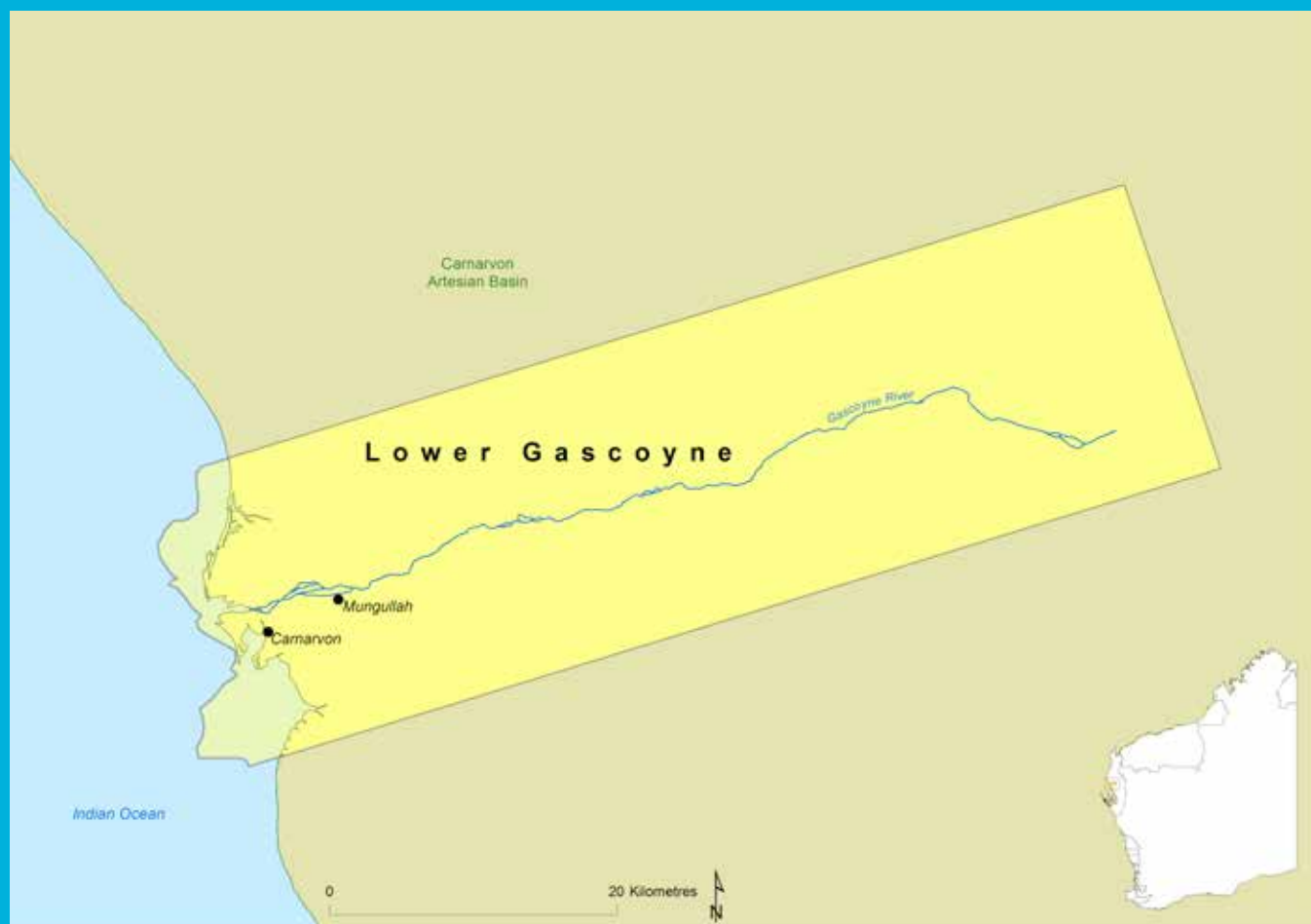
Context

The *Lower Collie surface water allocation plan* area is located in the state's south-west, 200 km south-east of Perth. Surface water resources in the area are characterised by regulated releases from upstream reservoirs and seasonally variable unregulated flows from tributaries. Most surface water use in the area is for horticulture and agriculture in the Harvey and Collie irrigation districts and along the river. Rainfall and inflows have reduced during the past few decades, preventing some licence holders from taking their full entitlement. The competing demands of agriculture and expanding industry in the drying climate are the central water management considerations in the area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The draft plan was released for public comment in May 2011. The final plan is due to be released in 2014. The plan is due for review after 2020.
2. Does the plan include key assessments?	Yes	Hydrological, economic, social and environmental issues were considered in the key assessments. Analysis of risks to the water resource and critical human needs were included in assessments.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	No significant overuse has been identified in the plan area, although some parts of the catchment have local overuse or are close to full allocation. Overallocation is prevented by setting allocation limits and minimum flow requirements, as well as extraction restrictions during low-flow periods. The process of setting allocation limits acknowledges the trade-off between environmental requirements and current consumptive demand in some tributaries.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Resource and management objectives are stated and supported by a range of relevant management strategies, policies and actions. Inclusion of performance indicators in the plan allows for the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Unlicensed stock and domestic use is measured or estimated and included in the allocation limit calculations. An assessment of interception by plantation forestry found the potential impact was insignificant.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan quantifies the groundwater contribution to river baseflow. Significant groundwater extractions in the area are licensed.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental objectives are specified. Environmental water requirements are identified. Provisions for the regulated parts of the system are made through specified volumetric releases that seek to mimic natural flow variations. Provision in unregulated systems is through specified minimum flow thresholds. Ecological monitoring arrangements are identified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	A monitoring and reporting framework is set out in the plan. There is no evidence of monitoring because the plan is not yet finalised. Compliance and enforcement provisions are specified in legislation and the plan has additional requirements.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan considers climate variability and climate change in setting allocations and flow regimes. Climate change risk, as a function of variability and change, is accounted for in relation to water demand and reliability of supply. The plan suggests that groundwater use is expected to increase as the climate dries.
11. Is stakeholder engagement in the planning process adequate?	Yes	Consultation before the release of this draft has been thorough. The process has included social value studies of all river and water users, including Indigenous groups.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan is not yet finalised.

LOWER GASCOYNE WATER ALLOCATION PLAN 2011



Context

The *Lower Gascoyne water allocation plan* area is located on the state's central coast. The predominant water resource is groundwater drawn from the alluvial riverbed deposits. River flow is highly ephemeral, with flow and alluvial groundwater recharge events strongly driven by significant rainfall. The primary use of water in the area is for horticulture in the Carnarvon horticultural district. Managing the seasonal variability of the resource and securing resources for horticultural expansion under the state's Gascoyne Food Bowl Initiative is the plan's central focus.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since November 2010. It was finalised in October 2011. The plan does not identify a date for review.
2. Does the plan include key assessments?	Yes	Hydrogeological and environmental assessments have been undertaken. Social, cultural and economic value assessments were included.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Although the plan does not identify any areas of overuse, one subarea is overallocated. The plan aims to prevent further overallocation by setting allocation limits for each subarea. The setting of allocation limits has involved the trade-off of 100 per cent supply reliability in some areas to protect resource sustainability. Historical overallocation is being progressively addressed through recouping of unused licensed entitlements, and is expected to be finalised within three years of plan commencement.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan sets out detailed resource and management objectives underpinned by a range of relevant management strategies, policies and monitoring arrangements. Inclusion of performance indicators allows for the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land. Given the nature of the water resources in the plan area, demand for trade is likely to be low.
6. Is interception appropriately considered and integrated into the plan?	Yes	Unlicensed stock and domestic extractions are included in allocation limits and currently no other unlicensed water extraction or interception activities are occurring in the area.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Connectivity of the surface water and groundwater systems is clearly identified and highly significant as aquifer recharge is strongly linked to the episodic high river-flow events. The strong seasonal variation in recharge is accounted for in the allocation limits and management rules.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Groundwater-dependent pool and riparian vegetation habitats are identified in the plan. While specific environmental water requirements for these assets is not assessed, general provisions are made through local extraction rules and management triggers linked to water levels.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. Aquifer status reports provide evidence that some monitoring is occurring (e.g. streamflow, groundwater use and salinity). Annual reporting commitments have not been met although DoW has advised that an internal evaluation has been completed. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Extremes of recharge and inflow, and the potential risks to water resources from climate change, have been comprehensively considered in the plan's development.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were engaged throughout the plan's development. A statement of response to stakeholder submissions is published. There is evidence that stakeholders are involved in the plan's implementation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Aquifer status reports provide evidence that some progress is being made to achieve plan outcomes, in particular maximising extraction of surface water when available and carefully managing groundwater extraction to minimise salinity impacts.

MIDDLE CANNING RIVER SURFACE WATER ALLOCATION PLAN 2012



Context

After the *Lower Canning River surface water allocation plan* for public comment was finalised, the plan name was changed to the *Middle Canning River surface water allocation plan* to ensure consistency in the naming of the river reach covered by the plan. The plan area is located along the south-east corridor of Perth's metropolitan area. The plan covers part of the Canning River's main channel – downstream from the Canning Dam to the Kent Street Weir. Flows in the Canning River are highly modified as a result of dams and pumpbacks associated with Perth's drinking water supply. After the dams were built several release points were constructed to release scheme water into the river to provide water for the environment, and riparian and agricultural users. Demand for water has been decreasing as urbanisation increases along the river. The plan's central focus is to provide for existing use and improve the environmental flow regime under drying climatic conditions.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The final plan was released in September 2012 and is due for review in 2016.
2. Does the plan include key assessments?	Yes	Comprehensive hydrological and ecological water requirement assessments form the basis of the plan. Social and economic values were also considered in the plan's development.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan identifies that the system is overallocated and reduces the allocation limit to 10 per cent below current use. Recovery of unused entitlements began in 2005, and this process will continue under plan provisions but no timeframe to return entitlements to the new allocation limit has been set. Reclassification of land use to 'urban' will trigger development controls that will further aid recovery.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clear, measureable objectives and implementation strategies. The inclusion of specific performance indicators will allow for ongoing assessment of plan objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan manages a highly regulated system. Stock and domestic riparian access is the main interception activity and is expected to decline with increasing urbanisation.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Unable to assess	There is no information in the plan, or supporting key assessments, about the degree of connectivity.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental objectives are set out. A detailed assessment of environmental water requirements has been undertaken. Provisions include environmental releases to meet specific ecological flow thresholds, focused on low-flow periods.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan sets out a monitoring program and there is evidence that some monitoring is occurring, (e.g. flow and some water quality monitoring). The plan has committed to periodic reporting. The results of an internal annual evaluation of the plan's performance have been discussed with a key stakeholder group but not publicly released. DoW has advised that an evaluation statement will be published by 2015. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan includes management responses for annual rainfall triggers, including management variations for drought conditions. Long-term strategies for dealing with climate change have not been addressed.
11. Is stakeholder engagement in the planning process adequate?	Yes	There is clear evidence of stakeholder engagement in all stages of plan development. The planning process was responsive to stakeholder input, with the environmental watering arrangements set out under the draft plan adjusted in the final plan following concern from stakeholders about river health in low-flow conditions.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Although the plan has only been in place since September 2012, there are indications that implementation actions are being undertaken and plan objectives have been partially met. The daily monitoring of streamflow demonstrates that flows have remained above minimum thresholds since the plan was finalised.

MURRAY GROUNDWATER ALLOCATION PLAN 2012

Context

The *Murray groundwater allocation plan* area is located in the state's south-west, 50 km south of Perth. The plan covers the unconfined and confined aquifers found in the area. Current use is dominated by agriculture and industry. Increasing urbanisation and intensification of agriculture and industry requirements are creating greater demand for water. Sustainably developing the resources to meet this increasing demand is the plan's focus.



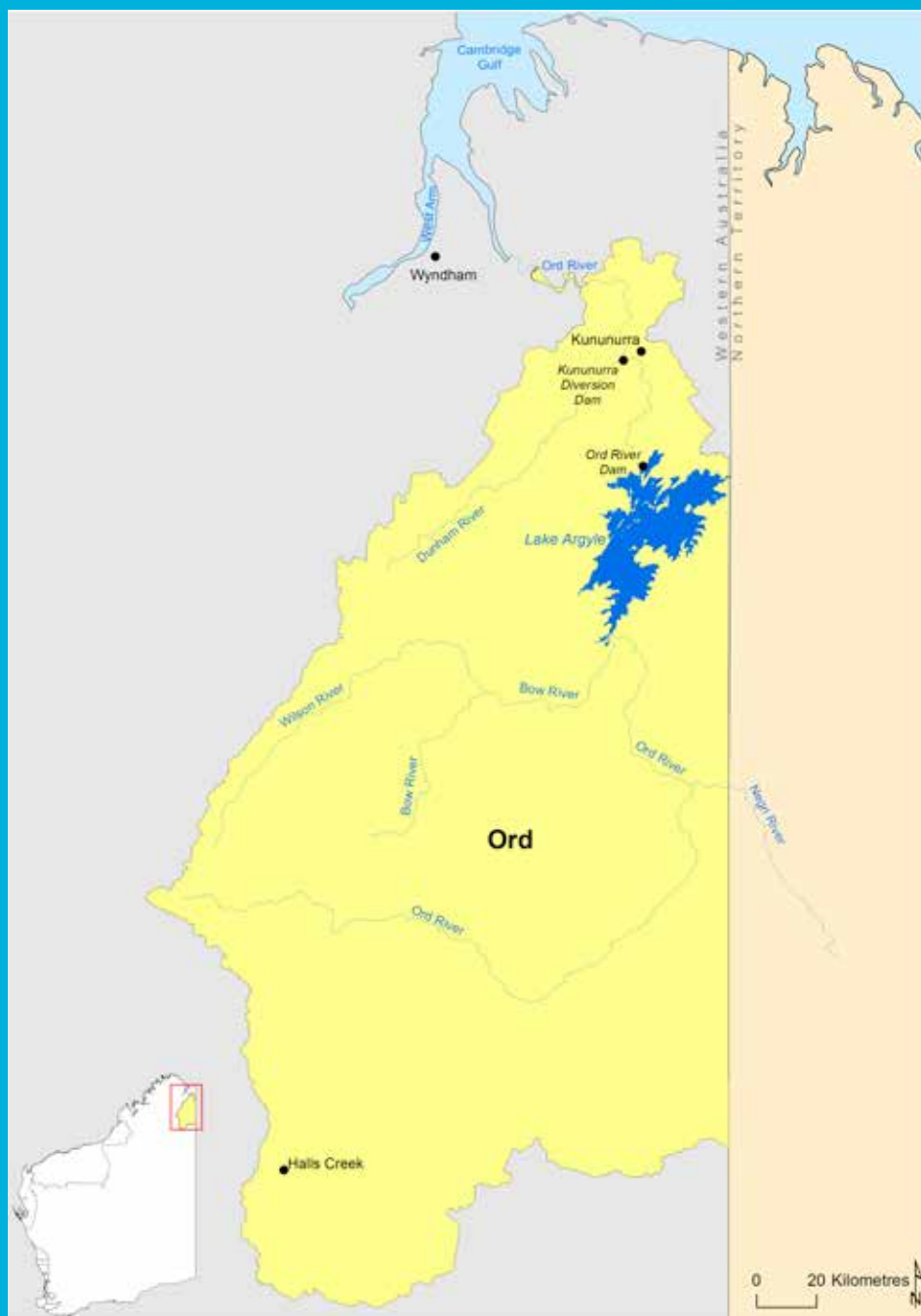
Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The final plan was released in April 2012. The plan is due for review in 2017.
2. Does the plan include key assessments?	Yes	All assessments have been undertaken in the plan's development. The environmental requirements of shallow groundwater systems in the plan area are being investigated.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Allocation limits have been set to maintain current water levels and quality. Some aquifers are fully allocated and may be locally overused. The plan aims to prevent overallocation by keeping entitlements to the limits set under the plan. To meet development demand, allocation limits in some areas are set above the modelled yield, with local drawdown impacts managed through licence conditions and extraction density controls.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan sets out detailed resource and management objectives underpinned by a range of relevant management strategies, policies and monitoring arrangements. Inclusion of performance indicators allows for the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Estimated unlicensed stock and domestic use is included in the plan's allocation limits.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Significant hydraulic connection between aquifers, and potential impacts on GDEs, are considered in setting allocation limits and local licensing rules.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Plan objectives include management of GDEs. The plan includes environmental water provisions through setting extraction limits to maintain <i>in situ</i> water and specifies local licensing policies for development and extraction near GDEs.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan sets out a monitoring program, although this is being reviewed to better align with plan objectives. There is evidence that some monitoring is occurring (e.g. groundwater levels), but annual reporting commitments have not been met. DoW has advised it has conducted an internal annual evaluation of the plan's performance and will publish an evaluation statement by 2015. Compliance and enforcement provisions are specified in legislation.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Allocation limits were revised based on historical rainfall records representing recent dry decades. The impact of future climate change has not been accounted for in setting the revised limits, although one of the plan's actions is to consider future climate scenarios when it is evaluated.
11. Is stakeholder engagement in the planning process adequate?	Yes	There is clear evidence of stakeholder engagement in the later stages of plan development, but the level of engagement in pre-planning and draft plan development is less clear.
12. Have identified outcomes been achieved during the reporting period?	Unable to assess	There is limited publicly available evidence of plan objectives being met. DoW has advised the plan will be evaluated in 2014.

ORD SURFACE WATER ALLOCATION PLAN 2013

Context

The *Ord surface water allocation plan 2013* updates and replaces the *Ord River water management plan 2006*. This assessment is based on the replacement plan unless specific reference is made to the original plan. The plan area is located in the state's remote far north-east, which experiences a tropical climate with pronounced wet and dry seasons. The plan applies to the broader Ord River catchment and encompasses the regulated and substantially modified sections of the riverine system. The lower Ord River floodplain, Lake Kununurra and Lake Argyle are Ramsar-listed on the basis of their post-dam values. Surface water is predominantly used for irrigation and power generation, but also for mining and domestic supplies. The plan was updated to support and resolve competing demands for water, in particular from the expansion of the Ord irrigation area and an increasing demand for hydropower. Revised water release rules provide for irrigation and power generation while protecting the downstream environment.



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A plan has been in place since 2006. A replacement plan was finalised in October 2013 and is due for review in 2019.
2. Does the plan include key assessments?	Yes	Comprehensive key assessments underpin the plan. These include updates to the lower Ord River environmental water requirement, the hydrological dataset and water availability scenarios.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan sets allocation limits and minimum flow requirements to maintain current ecological values at low levels of risk.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan sets out broad outcomes and more detailed objectives linked to management strategies, local licensing rules and monitoring arrangements. Inclusion of performance indicators allows for ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land. Trade is primarily carried out between Ord Irrigation Cooperative (OIC) members and occurs freely under their customer service charter. The current low level of demand for trade outside of the OIC is noted.
6. Is interception appropriately considered and integrated into the plan?	Yes	Water releases for hydropower are closely managed under the plan. The potential impact of interception through the further regulation of tributaries is recognised. Stock and domestic use is likely to be minimal but an estimate would have provided a more complete accounting of water use.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The most significant connectivity issue is related to the impact of agricultural water use on groundwater within irrigation areas. The plan sets out management strategies where relevant.
8. Does the plan contain accountable environmental watering arrangements?	Yes	A revised environmental water provision, which includes variable flow rates and timings, has been set – informing the development of allocation limits and water release rules. It is unclear whether the revised arrangements have been underpinned by an evaluation of the interim environmental water provision set in the 2006 plan. Ongoing ecological monitoring arrangements have been specified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	No specific monitoring and reporting arrangements were set out under the 2006 plan. An evaluation statement for this plan has not been prepared and there is limited evidence to assess whether monitoring against objectives has occurred. The updated 2013 plan includes a detailed monitoring framework, including ecological monitoring, and proposes an annual stakeholder meeting that should allow for regular reporting. Compliance and enforcement provisions are specified in legislation.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Future climate forecasts are for similar conditions, therefore historical data informs the plan. The plan accounts for and manages variability through the development and implementation of complex water release rules. These rules are based on time-series rainfall and inflow data and include tiered restrictions during drought conditions to maintain water availability for irrigation and the environment.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were involved in developing the updated plan. There is evidence of stakeholder involvement in implementation of the 2006 plan. The updated plan has a commitment to continue this involvement.
12. Have identified outcomes been achieved during the reporting period?	To some extent	It is unclear whether an evaluation of the 2006 plan informed development of the updated plan. There is evidence that some of the management arrangements from the 2006 plan have been implemented. The first evaluation of the updated plan is due for publication by 2016. In the interim, plan performance will be discussed with key stakeholders at an annual public meeting.

PILBARA GROUNDWATER ALLOCATION PLAN 2013



Context

The *Pilbara groundwater allocation plan* area covers the Pilbara region, which is about 1000 km north of Perth. The region is undergoing significant growth and development as a result of mining and its use as a base for the offshore oil and gas industry. The plan was developed to provide certainty around water availability for the coastal towns and ports that support these industries and to clearly outline regulatory and licence assessment arrangements for the mining industry. The plan covers a series of target aquifers in some detail. These include unconfined alluvial aquifers, and unconfined and confined sedimentary aquifers that are important for current and future public water supply and industry. The plan also refers to a series of non-target aquifers, which include fractured rock aquifers important for mining.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since October 2013 and is due for review in 2020.
2. Does the plan include key assessments?	Yes	Key assessments have been completed to a level of detail commensurate with defined risks to the water resources. Comprehensive assessments based on new information have been completed for high-risk target water resources to inform detailed management arrangements. Assessments based on existing information have been completed for low-risk target resources.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	For most of the plan's water resources, overallocation is prevented by setting allocation limits. The allocation limit for the Millstream resource is above the long-term sustainable yield. It is based on a clear trade-off and there are detailed management arrangements in place to protect high-value GDEs while maximising water availability for public water supply.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan sets out broad outcomes and more detailed objectives linked to management strategies, local licensing rules and monitoring arrangements. Inclusion of performance indicators allows for ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits are set for all the plan's water resources except the fractured rock aquifers. Local licensing rules for all resources are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land. The current low level of demand for trade is noted.
6. Is interception appropriately considered and integrated into the plan?	Yes	Unlicensed stock and domestic use is estimated and accounted for in allocation limits for target resources. Water extracted for mining and petroleum activities is licensed and accounted for within allocation limits (where they are set). These activities are managed in accordance with the statewide mining policy.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises that episodic surface water flows are critical for recharging alluvial aquifers. Groundwater discharge maintains GDEs which have high environmental, cultural and social values. Allocation limits have been set to protect GDEs and detailed management arrangements are in place to protect key GDEs in high-risk water resources.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Specific environmental objectives have been set in the plan. Environmental water requirements for key GDEs have been identified and provisions set in the plan for a range of water availability scenarios.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The plan and supporting documents set out a detailed monitoring and reporting framework, including ecological monitoring. An internal evaluation will be undertaken annually, with a statement released publicly every three years. The plan was released in October 2013 and no reporting is due.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Climate projections do not indicate a clear trend, thus historical data underpins the plan. The region's extreme variability is accounted for in allocation limits and local licensing policies. For high-risk target resources, the plan has provisions to respond to a range of water availability scenarios to protect key water-dependent ecosystems.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders have been involved in all stages of plan development.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	As this plan has only been operational since October 2013, an assessment of this criterion is not possible at this time.

ROCKINGHAM-STAKEHILL GROUNDWATER MANAGEMENT PLAN 2008



Context

The *Rockingham-Stakehill groundwater management plan* area is located 50 km south of Perth. The plan covers the unconfined and confined aquifers found in the plan area. Current water use includes that for recreation, irrigation, horticulture, industry and domestic supply. Groundwater-dependent wetlands with national and international protection status are located in the area. Water-level declines in the most-used unconfined aquifer have occurred in recent years as recharge has decreased because of the drying climate. Managing the resource to meet increasing demand is the plan's central focus.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This plan has been in place since November 2008. It was due to be replaced with a statutory plan in 2011 but enabling legislation has not been introduced to date. The plan was reviewed in 2012 and will remain in place pending further annual evaluation.
2. Does the plan include key assessments?	Yes	All key assessments have been undertaken in development of the plan. Environmental water requirements have not been specifically identified.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. Nevertheless, several subareas are overallocated and at risk of overuse if unused entitlements are activated. There is evidence of declining water levels across the area. Overallocation is prevented through licence management, including recovery of unused or under-used entitlements. However, the plan does not specify a timeframe for the return of entitlements to the revised allocation limit.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan sets out resource and management objectives underpinned by a range of relevant management strategies, policies and monitoring arrangements. Lack of specific performance indicators inhibits the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Estimated unlicensed stock and domestic use is included in plan allocation limits. Mining below the watertable requires a licence. Growth in interception activities is limited by increasing urbanisation in the area.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Where significant hydraulic connection between aquifers is found, aquifers are jointly managed. Beyond qualitative assessment of groundwater connection to wetlands, limited information is available on the extent and significance of groundwater/surface water connections.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	No clear environmental objectives are specified. While GDEs are identified, including high-value Ramsar-listed wetlands, environmental water requirements are not detailed. <i>In situ</i> needs are generally provided through allocation limits on consumptive use and local licence conditions. Limits have been set with consideration of water levels monitored at selected representative sites.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan sets out a monitoring and reporting framework. A review of the monitoring program is underway. There is evidence that some monitoring is occurring (e.g. groundwater levels), but annual reporting commitments have not been met. One evaluation statement has been published that includes a summary of monitoring results since the plan's release. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan takes dry climate extremes into account. Future allocation reductions are flagged if the drying trend continues. The projected impact of climate change is not considered.
11. Is stakeholder engagement in the planning process adequate?	No	There is no evidence of stakeholder engagement.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Plan objectives have been met to some extent. While water-level declines in the unconfined aquifer are stabilising, concern remains about the protection of wetlands. The evaluation statement indicates that declining pressure heads in the confined aquifer are linked to cross-boundary impacts and that a regional management approach is required, but no further detail is provided – other than to state that this will be considered during plan development for neighbouring groundwater management areas.

SOUTH WEST GROUNDWATER AREAS ALLOCATION PLAN 2009



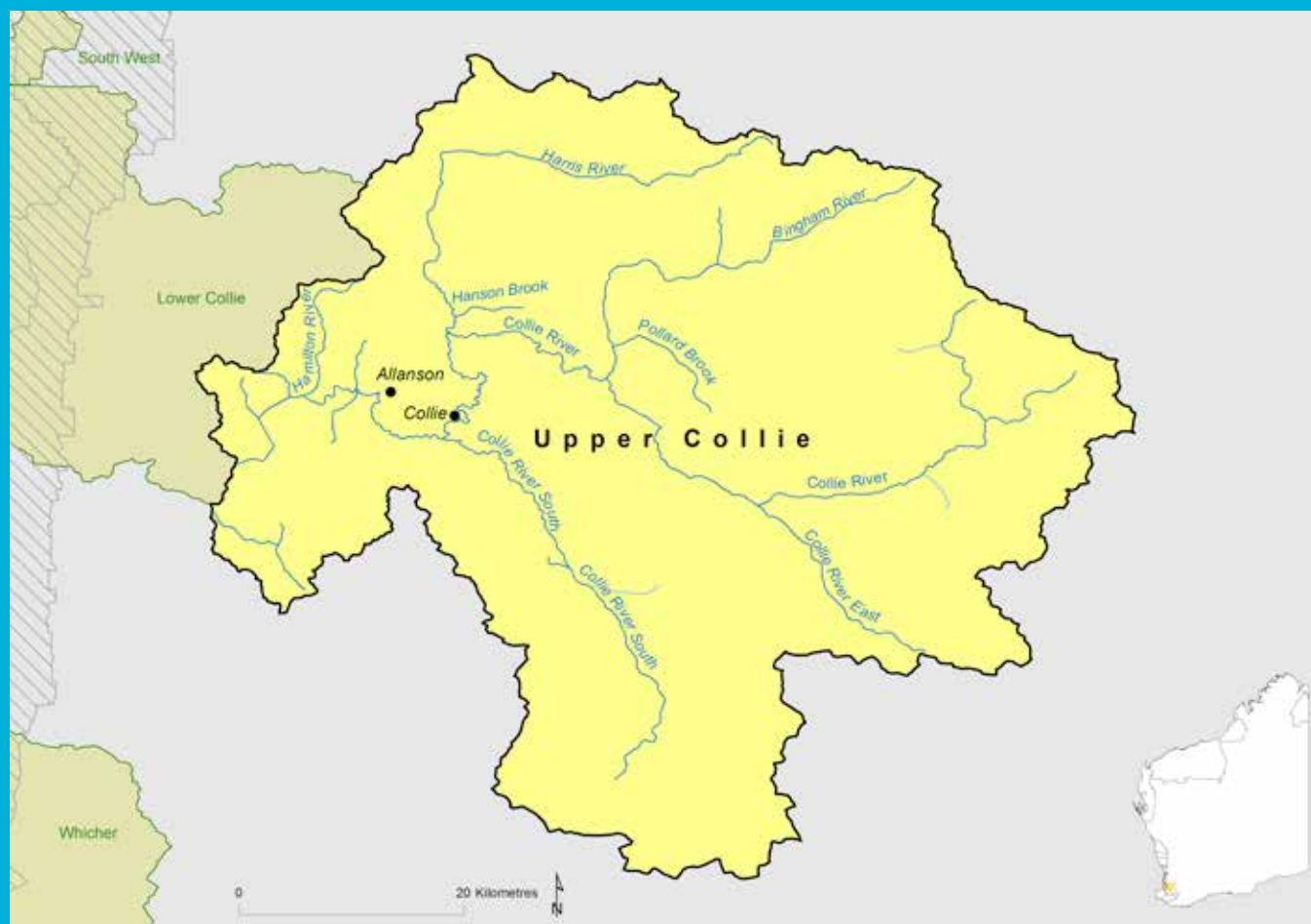
Context

The *South West groundwater areas allocation plan* covers the state's south-western corner, centred 250 km south of Perth. The plan covers the unconfined and confined aquifers found in the area. Current water use is dominated by public water supply, horticulture, pasture and mining. A significant proportion of the area is planted to state forest. Water-level declines in the confined aquifers have occurred in recent years as recharge has decreased in the drying climate and demand has increased with rapid population growth and land use change (especially in coastal areas). Sustainably meeting this increasing demand is the plan's central focus. Much of the plan area is overlain by the *Whicher Area surface water allocation plan*.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan has been in place since May 2009. It was due to be replaced with a statutory plan in 2011–12. It was reviewed in 2012 and will remain in place at least until the next annual evaluation.
2. Does the plan include key assessments?	Yes	All key assessments were undertaken in the development of the plan, including comprehensive social, cultural and Indigenous values and impacts studies.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. Several subareas are overallocated and at risk if unused entitlements are activated. Overallocation is being addressed through recovery of unused water entitlements. However, the plan does not specify a timeframe for the return of licensed entitlements to the revised allocation limits.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Plan objectives and outcomes are clearly stated and linked to plan actions and monitoring arrangements. Inclusion of performance indicators in the plan allows for the ongoing assessment of outcomes.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Estimated unlicensed stock and domestic use is included in plan allocation limits and plantation forestry impacts have been considered in setting these limits. Interception by plantations is currently not licensable in Western Australia.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan identifies areas of connectivity that are highly ecologically significant, particularly in maintaining watercourse baseflows and wetlands in low-flow periods. The plan seeks to protect surface water systems from the impacts of groundwater drawdown through allocation limits that account for connectivity, development conditions near surface water systems and targeted monitoring.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets out environmental objectives and identifies groundwater-dependent environmental assets. Environmental water needs are broadly discussed and modelled at representative sites. Extraction limits maintain <i>in situ</i> water, while local development and monitoring requirements in the vicinity of GDEs seek to protect water levels and quality. Specific monitoring arrangements for a small number of representative trigger response GDE sites are identified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring and reporting framework is set out in the plan. There is evidence that some monitoring is occurring (e.g. groundwater levels at regional and GDE sites), but annual reporting commitments have not been met. One evaluation statement has been published that includes a summary of monitoring results since the plan's release. Compliance and enforcement provisions are specified in legislation and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Climate variability and change are considered in the plan and underlying assessments. The potential impacts of climate variability and change have been estimated and accounted for in setting new allocation limits.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were engaged throughout the plan's development, including Indigenous values being identified. A statement of response to stakeholder submissions was published. Engagement with water use groups continued after the final plan's release.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There is evidence that implementation actions are being undertaken and plan objectives have been met to some extent, but the recovery of overallocated resources is not yet complete.

UPPER COLLIE WATER ALLOCATION PLAN 2009



Context

The *Upper Collie water allocation plan* area is located in the state's south-west, 200 km south-east of Perth. It covers surface water, groundwater and mine dewater resources in the region. The main water uses in the area are for power generation, mining, irrigation and public water supply. Long-running coalmine dewatering has led to resource stress in some parts of the area. Meeting current demands and recovery of stressed resources is the plan's focus.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This plan has been in place since August 2009. The plan does not identify a date for review.
2. Does the plan include key assessments?	Yes	Comprehensive hydrological, social, economic and environmental assessments were undertaken for the plan's development.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The Cardiff and Premier subareas are overallocated. The plan outlines steps to recover water, including recovering unused entitlements and reducing entitlements for renewed licences. However, the plan does not specify a timeframe for the return of entitlements to the revised allocation limit.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Plan objectives are clearly stated and linked to plan actions and monitoring arrangements. Inclusion of performance indicators in the plan allows for the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	Yes	Mine dewatering is acknowledged, quantified and licensed. The impact of plantation forestry and farm dams on inflows and recharge is quantified. Estimated unlicensed stock and domestic use is included in allocation limits. Compared with mining extraction, other interception activities in the area pose a low risk to the resource and entitlements.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan manages surface water and groundwater resources, including recharge and discharge. Groundwater discharge to river pools and baseflows is recognised and protected through groundwater allocation limits and setback requirements for bores near watercourses.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan sets out broad environmental objectives and environmental water requirements. Environmental water provision is managed through allocation limits and licence conditions. Obligations are placed on mining water licensees to offset dewatering impacts on river pools and baseflow. No specific ecosystem monitoring program is specified.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan sets out a detailed monitoring and reporting framework. There is limited evidence monitoring is occurring and annual reporting commitments have not been met. Compliance and enforcement provisions are specified in legislation and additional local licence requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	While the modelled groundwater allocation limit scenarios incorporate an assumed reduction in annual rainfall recharge, surface water limits are based on historical record only. Seasonal variability is managed through low-flow extraction restrictions (surface water) and water-level triggers (groundwater).
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholders were engaged throughout the plan's development, including Indigenous values being identified. A statement of response to stakeholder submissions is published.
12. Have identified outcomes been achieved during the reporting period?	Unable to assess	The plan has a commitment to annual reporting on monitoring and achievement of plan objectives. An internal evaluation has been completed but no public evaluation statement has been published to date.

WARREN-DONNELLY SURFACE WATER ALLOCATION PLAN 2012



Context

The *Warren-Donnelly surface water allocation plan* area is located in the state's south-west, 300 km south of Perth. Surface water resources in the region are characterised by a network of rivers and streams, with high numbers of in-stream dams in some areas. Irrigated agriculture and public water supply are the main surface water uses in the area. There are substantial areas of native and plantation forestry. Managing potential overuse associated with the high density of in-stream dam development in some areas is the plan's focus.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The final plan was released in April 2012 and is due for review in January 2019.
2. Does the plan include key assessments?	Yes	Comprehensive hydrological and environmental assessments have been undertaken. Current and future social and economic demands are identified.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Overuse is not identified in the plan, although there is a history of high levels of diversion from the many in-stream dams located in the area. The plan specifies new allocation limits seeking to maintain reliability of supply to existing users.
4. Does the plan include clearly identified and measurable outcomes?	Yes	Resource and management objectives are set out, underpinned by a range of relevant management strategies, policies and actions. Inclusion of performance indicators in the plan allows for the ongoing assessment of objectives.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The significant cumulative diversion to unlicensed in-stream stock and domestic dams is estimated and included in allocation limits. The plan does not quantify the interception impacts of potential plantation forestry expansion.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	Although connectivity is identified and accounted for to some extent, there is limited publicly available information quantifying the degree of connectivity.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental objectives are set out in the plan. Ecological flow thresholds are set to monitor low-flow events. More comprehensive identification of environmental water requirements is flagged.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan sets out a monitoring program to be reviewed during plan implementation to ensure it aligns with plan objectives. Streamflow monitoring is being undertaken, but annual reporting commitments have not been met. Results from an internal evaluation of the plan's performance have been discussed with a key stakeholder group but have not been publicly released. Compliance and enforcement provisions are specified in legislation.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan considers climate change and variability by modelling reliability of supply under different inflow scenarios, drawing on recent drying climate data. Low-flow thresholds have been set and are to be monitored.
11. Is stakeholder engagement in the planning process adequate?	Yes	There is clear evidence of stakeholder engagement in the development of the draft and final plans, including consultation with a local water advisory group – which is likely to have an ongoing role in plan implementation.
12. Have identified outcomes been achieved during the reporting period?	To some extent	There are indications that implementation actions are underway, including creation of a new farm dam reliability tool. A trial to take lower-reliability water above the allocation limit during periods of higher rainfall and streamflow indicates that plan objectives have been partially met.

WHICHER AREA SURFACE WATER ALLOCATION PLAN 2009



Context

The *Whicher Area surface water allocation plan* area is in the state's south-west corner, centred 250 km south of Perth. The plan covers many diverse surface water resources with varying levels of use. It has pristine systems with high ecological value in the upper catchments and highly modified lower reaches. The main water uses are horticulture and viticulture, with water mostly being accessed through streamflow capture and storage by in-stream dams. Increasing demand (particularly for viticulture), land use change and lower inflows in the drying climate have seen rising levels of resource stress. Much of the plan area is underlain by the *South West groundwater areas allocation plan*. The Whicher Area was proclaimed in 2007, requiring most surface water use to be licensed. The plan was developed to establish water security for existing users and water-dependent environmental values by setting allocation limits for the first time.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	This plan has been in place since September 2009. It was due to be replaced with a statutory plan in 2012 but enabling legislation has not been introduced to date.
2. Does the plan include key assessments?	To some extent	All key assessments were undertaken during the plan's development. Further assessment of environmental water requirements is an action to be completed as part of the plan's implementation.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	Allocation limits are set under the plan for the first time. The plan does not identify any areas of overuse, but several water resources are identified as fully allocated. Revised estimates completed as part of the plan's evaluation indicate that a number of water resources are now overallocated and others may be approaching fully allocated status. Recovery of overallocated resources will begin pending further evaluation and investigation of water use and resource reliability as part of the plan's implementation.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	Broad objectives are stated and supported by a range of relevant management strategies and policies. Performance indicators are included in the plan, although not all are clearly measurable.
5. Does the plan facilitate trade?	To some extent	Allocation limits and local licensing rules are set under the plan. Trade rules are set out in statewide policy. Constraints to trading remain under the RiWI Act as water licences are bundled and market participation is limited to those with legal access to land.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Estimated diversion to unlicensed stock use dams is included in the calculation of allocation limits. While current forestry interception is implicitly accounted for in setting allocation limits, the plan does not quantify or regulate the potential interception impacts of plantation forestry expansion.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan identifies areas of connectivity between surface water and groundwater systems. Groundwater allocation limits in the corresponding <i>South West groundwater area allocation plan</i> account for connectivity.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	Environmental objectives are set out in the plan. Broad environmental water needs have been considered in calculating yield and diversion limits, and in setting allocation limits. More detailed environmental water requirements for several water resources have been published in environmental flow studies. These will be included in the plan if allocation limits are reviewed in the future.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan does not include a monitoring program but there is evidence that monitoring is occurring (e.g. flow monitoring and metering of licensed water use). Annual reporting commitments have not been met. One evaluation statement has been published that includes a summary of monitoring results since the plan's release. Compliance and enforcement provisions are specified in legislation, with additional arrangements specified in the plan.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan considers and includes climate change and variability with respect to the reliability of supply under different inflow scenarios, based on recent inflow data.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement has been comprehensive during development and implementation of this plan. A statement of response to stakeholder submissions has been published. There is evidence of ongoing stakeholder involvement in plan implementation through consultation with water user groups.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Implementation actions are being undertaken, such as the completion of several environmental water requirement reports. Plan outcomes have been partially met, with substantial progress in the licensing of surface water use following proclamation of the area in 2007. Revisions to water use estimates have resulted in additional water resources being classified as overallocated. Combined with declining rainfall and streamflow, this may impact on the achievement of some plan objectives in high-risk resources.

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8 Tasmania

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The context of water planning in Tasmania

Water planning in Tasmania aims to provide sustainable development and management of the state's freshwater resources and preserve key features of flow regimes to support water-dependent ecosystems. Even though Tasmania constitutes less than one per cent of Australia's landmass, it has 12 per cent of its freshwater resources. The state's terrain is largely high relief and the distribution of water resources and rainfall across Tasmania varies considerably. The western region exhibits relatively high rainfall, with north-west Tasmania being a growth area for water resource development and a priority for water planning activities during 2013–14. Irrigated agriculture and the greater proportion of Tasmania's population are concentrated in the state's central and eastern regions, which are considerably drier – having lower water availability and greater seasonal variability.

Temporal variation of water availability can result in summer periods where demand may exceed the natural streamflow. Irrigated agriculture, power generation and domestic supply are the primary uses for freshwater resources and extraction is largely from surface water systems. Planning is prioritised for areas of greatest competition and demand for water resources and therefore coincides with the development of irrigation schemes. Water plans provide a clear framework for allocation, extraction and management of water in the plan area and aim to strike a balance in preserving environmental values and productive capacity into the future.

Planning arrangements

Key legislation

The *Water Management Act 1999* (WMA 1999) provides the statutory basis for the planning, regulation, management, protection and allocation of water resources in the state. The WMA 1999 provides, as a discretionary activity, for the development of water management plans (WMPs), which are undertaken by the Department of Primary Industries, Parks, Water and Environment (DPIPWE) in consultation with stakeholders. DPIPWE is responsible for implementing the WMA 1999 and for overall management and protection of the state's water resources.

Several intervening amendments to the WMA 1999 have occurred to supplement elements of the planning process. The protection of groundwater is supported by the requirement for well works permits and well driller's licences, while environmental values are protected through the requirement for dam works permits.

Water management plans

WMPs outline the day-to-day management arrangements for relevant water resources, including provision of water allocation limits and water access rules. WMPs are ongoing and may specify review requirements. All WMPs are required by the WMA 1999 to include a description of the water regime that best gives effect to the plans' objectives and an assessment of the plans' provisions for current and future users. WMPs must consider the State Policy on Water Quality Management 1997 and further the objectives of the Resource Management and Planning System of Tasmania (RMPS), a set of principles that define the state's sustainable development objectives. *Standard operating procedures for the development of statutory water management plans in Tasmania* (SOPs), revised in March 2010, have been developed to support water management planners.

Licensing and other arrangements

Water licences are required to extract water from a resource for commercial purposes. Under part 5 of the WMA 1999, water can be extracted from a resource for stock and domestic purposes and dispersed surface water and groundwater may be extracted by land owners or occupiers for any purpose, without a licence. Water licences may specify the surety with which a water allocation can be expected to be available for taking. Surety levels indicate the relative priority of entitlements and the reliability of different allocation types. Environmental water is at Surety Level 2, with the only higher priority water being stock and domestic and essential town water supplies at Surety Level 1.

Government-owned Hydro Tasmania is Australia's largest water user and, under the WMA 1999, holds a special water licence conferring on it the right to all water resources in a hydro-electric district (with the exception of water for town use, stock and domestic, resource-dependent ecosystems and allocated under water licences to other users). The terms of the special licence are subject to compliance by Hydro Tasmania and regulated by DPIPWE. Hydro Tasmania collaborates with DPIPWE on new plan development where catchments fall within a hydro district. Hydro Tasmania may be delegated responsibility for administration and implementation of WMPs in catchments where Hydro Tasmania infrastructure is established. Where water has been released from Hydro Tasmania dams and flows out of a hydro-electric district, it can be allocated to other users downstream.

Tasmanian Irrigation Pty Ltd (TI) was established in 2011 to develop and operate a suite of irrigation schemes, delivering water to enhance productive agricultural capacity. A state-owned company, it develops schemes through public/private partnerships and is a licensed user of water operating in accordance with Tasmania's water legislation.

To manage intensively used groundwater in a sustainable manner, Tasmania's first groundwater area – the Sassafras Wesley Vale – was appointed in 2012. Groundwater extraction for commercial purposes is licensed and subject to compliance measures, with metering being rolled out in accordance with licence conditions. Under the state's groundwater regulatory framework, assessment of groundwater resources and allowance for appropriate compliance measures is undertaken and included in new WMPs. In Tasmania, surface water and groundwater systems are assumed to be 100 per cent connected unless shown otherwise.

Table 6: Summary of planning instruments in Tasmania

Assessment criteria	State		Catchment	Comment
	WMA 1999	Operational policies	WMP	
1. Status of plan	yes		yes	A WMP may be created under Part 4 of the <i>Water Management Act 1999</i> and provide direction on how the discretionary powers in the WMA 1999 are to be applied in the area covered by the WMP.
2. Key assessments	yes	yes	yes	The WMA 1999 specifies that a WMP is required to include a description of the water regime to best meet the plan's objectives and the impacts of the plan on current and future use. SOPs describe the process for collecting information to inform plans.
3. Overuse status and pathways to sustainable water extraction			yes	WMPs contain rules to manage consumptive water entitlements and set allocation limits.
4. Clearly identified & measurable outcomes	yes	yes	yes	WMP objectives must be consistent with objectives of the WMA 1999 and the RMPS objectives.
5. Facilitation of trade	yes	yes	yes	Under the WMA 1999, the trading of water access entitlements and allocations is provided for. Region-specific allocation limits and access rules are included in WMPs to inform the water market.
6. Integration of water intercepting activities	yes		yes	The WMA 1999 regulates interception by farm dams, groundwater bores and the taking of dispersed surface water and provides that a WMP may require licensing. Plantation forestry is not regulated under the WMA 1999 but is regulated by Tasmania's <i>Forest Practices Act 1985</i> . Stock and domestic use is estimated in some WMPs.
7. Surface water/ groundwater connectivity	yes		yes	Surface water and groundwater are assumed to be 100 per cent connected unless shown otherwise. Groundwater areas can be appointed under the WMA 1999, requiring groundwater licensing for commercial extraction and triggering appropriate metering and consumption reporting measures. WMPs define the water resources to be managed by the plan.
8. Environmental water management arrangements	yes		yes	WMPs identify allocation limits and water access rules to provide the water regime to meet environmental objectives.
9. Monitoring, compliance and enforcement provisions	yes	yes	yes	Compliance and enforcement is covered by the Enforcement Policy for the WMA 1999. WMPs identify responsibilities for actions, such as monitoring and reporting.
10. Planning for climate change and extremes in inflows or recharge			yes	Climate variability is considered in the development and rules of WMPs.
11. Stakeholder engagement	yes	yes	yes	The WMA 1999 specifies requirements for public consultation for WMPs. SOPs outline procedures for stakeholder engagement.
12. Extent to which outcomes have been achieved	yes		yes	Measuring the achievement of plan outcomes is intended to occur through annual reports completed by DPIPWE and plan reviews. Continuous resource monitoring data is provided through the Water Information System of Tasmania (WIST).

Key findings

This section provides updated commentary on the previous report card assessment for Tasmania (key findings summarised below) and includes information on significant findings for 2013.

Previous findings

- *Good adaptive management through the progressive incorporation of new knowledge*
- *Limited monitoring, evaluation and reporting against plan objectives*

2013 findings

Progress in groundwater science to underpin planning decisions

The range, depth and quality of key assessments continue to expand to support new WMPs and knowledge incorporation into interception and hydrologic models is ongoing. New catchment studies, particularly relating to groundwater use and connectivity, are informing the development of new plans in which groundwater monitoring is undertaken and allowance made for review of licensing arrangements commensurate with extraction levels. To sustainably manage intensively used groundwater, Tasmania's first groundwater area for which groundwater is licensed and metered, was appointed in 2012. Stakeholders can access groundwater information through DPIPWE's *Groundwater information access portal*.

Strong stakeholder engagement

Tasmania's strategic and effective stakeholder engagement has continued and a transparent collaborative process for new plan development facilitates active community cooperation with plan objectives. Stakeholder-driven initiatives, such as water sharing arrangements, are underpinned by successful stakeholder/government collaboration.

Significant delays to plan reviews jeopardise effective adaptive management

To date, none of the scheduled plan reviews have been completed, although some have begun. Reviews are on hold indefinitely as resources are prioritised to areas of greatest need. Annual waterways monitoring reports ceased in 2008 and annual plan effectiveness reports are not required to be publicly communicated, although key resource monitoring data are available publicly through WIST. Tasmania advises that it intends to start publicly available reporting on water regime outcomes. While the current monitoring framework may be broadly fit-for-purpose to manage freshwater resources under existing climatic, development and demand conditions, changes to these conditions will require strengthened monitoring and evaluation arrangements to successfully manage risks to Tasmania's water resources.

Findings against 12 criteria

1. Status of water planning	There are 10 adopted WMPs in Tasmania as at the end of 2013. Since the last report the Boobyalla, Tomahawk, Sassafras Wesley Vale and South Esk plans have been adopted. The draft Ringarooma plan assessed in this document was subsequently adopted in March 2014. Consistent with plan provisions, the Sassafras Wesley Vale groundwater area was appointed through a Water Management Order in 2012. The draft Macquarie River WMP has been developed and completion of the public consultation process is underway. Prioritisation for WMP plan development is outlined in Tasmania's NWI implementation plan and updated in the 2013–14 DPIPWE annual report. Prioritised regions align with areas of greatest demand (and therefore risk) and link to the strategic development of new irrigation schemes.
2. Do plans include key assessments?	Improvements in the range, quality and depth of key assessments are supporting the development of new plans and are contextual to plan areas. Groundwater and connectivity assessments are also supporting the development of new plans. Hydrological modelling and interception tools are being used to inform new plan development and are progressively being updated to include new knowledge. Socio-economic assessment is not undertaken for all plans.
3. Do plans prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Tasmanian WMPs have not identified areas of overuse. Transparency surrounding the setting of sustainable extraction limits has improved over time and a range of key assessments contributes to decision-making. Tasmania adopts several measures to manage water extraction, including restriction management, cease-to-take thresholds that maintain minimum system flows for the environment, setting of allocation limits and issuing of licences under different surety levels.
4. Do plans include clearly identified and measurable outcomes?	Environmental, water usage and development and social objectives are clearly identified in plans and are location specific. All plans are required by the WMA 1999 to include discussion of the water regime's ability to achieve environmental and other related objectives. Reporting requirements are described with designated timelines and responsibilities.
5. Do plans facilitate trade?	The WMA 1999 provides for the trade of water access entitlements and allocations. WMPs specify access rules and limits allocation of the water resource available for trade to inform the market. Where groundwater is licensed it may be traded but to date this has been limited – with only one groundwater area established and no trade currently occurring. There has been increased interest in water trade opportunities, and while the potential and visibility of the water market has increased through the appointed groundwater area and irrigation scheme development, trade demand remains relatively low in Tasmania.
6. Is interception appropriately considered and integrated into plans?	Risk-based assessment of forestry interception has improved with inclusion of the Water Availability and Forest Landuse Planning Tool into new plan development, which is also informed by the results of the 2009 CSIRO Tasmania Sustainable Yields Project (CSIRO Tas SY). Interception by groundwater bores and taking of dispersed surface water are regulated under the WMA 1999 and acknowledged in plans, although generally not quantified. Some earlier plans do not include interception as effectively or benefit from the increased level of interception assessment described above.
7. Do plans include/ address GW/SW connectivity as appropriate?	New plans provide for groundwater monitoring and review of the status of groundwater licensing should extraction occur at unacceptable levels. New plans are informed by catchment-specific groundwater assessments. The appointment of Tasmania's first groundwater area recognises the requirement to sustainably manage intensive groundwater use in some catchments.
8. Do plans contain accountable environmental water management arrangements?	Environmental water is protected by access rules and sustainable allocation limits which are defined in all WMPs. Plans make provision for minimum flow regimes for the environment through water allocation limits, restriction management and cease-to-take provisions and, where applicable, groundwater thresholds and minimum lake levels are established. Environmental water is given a higher level of surety than all other consumptive uses (other than critical human needs and stock and domestic).
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Monitoring focuses mostly on streamflow and groundwater levels, which are linked to environmental and water usage and development objectives in plans. Continuous streamflow monitoring, groundwater levels, allocation records and some water quality information are publicly available on WIST but this data is not evaluated in regard to plan objectives. Some plans assume achievement of social objectives through the plan development process. Additional monitoring arrangements are resource dependent and it is unclear whether comprehensive environmental monitoring programs in some plans continue to be undertaken. Under Tasmania's compliance and enforcement framework, meter installation and water use reporting is being progressively implemented as conditions of both surface water and groundwater licences.

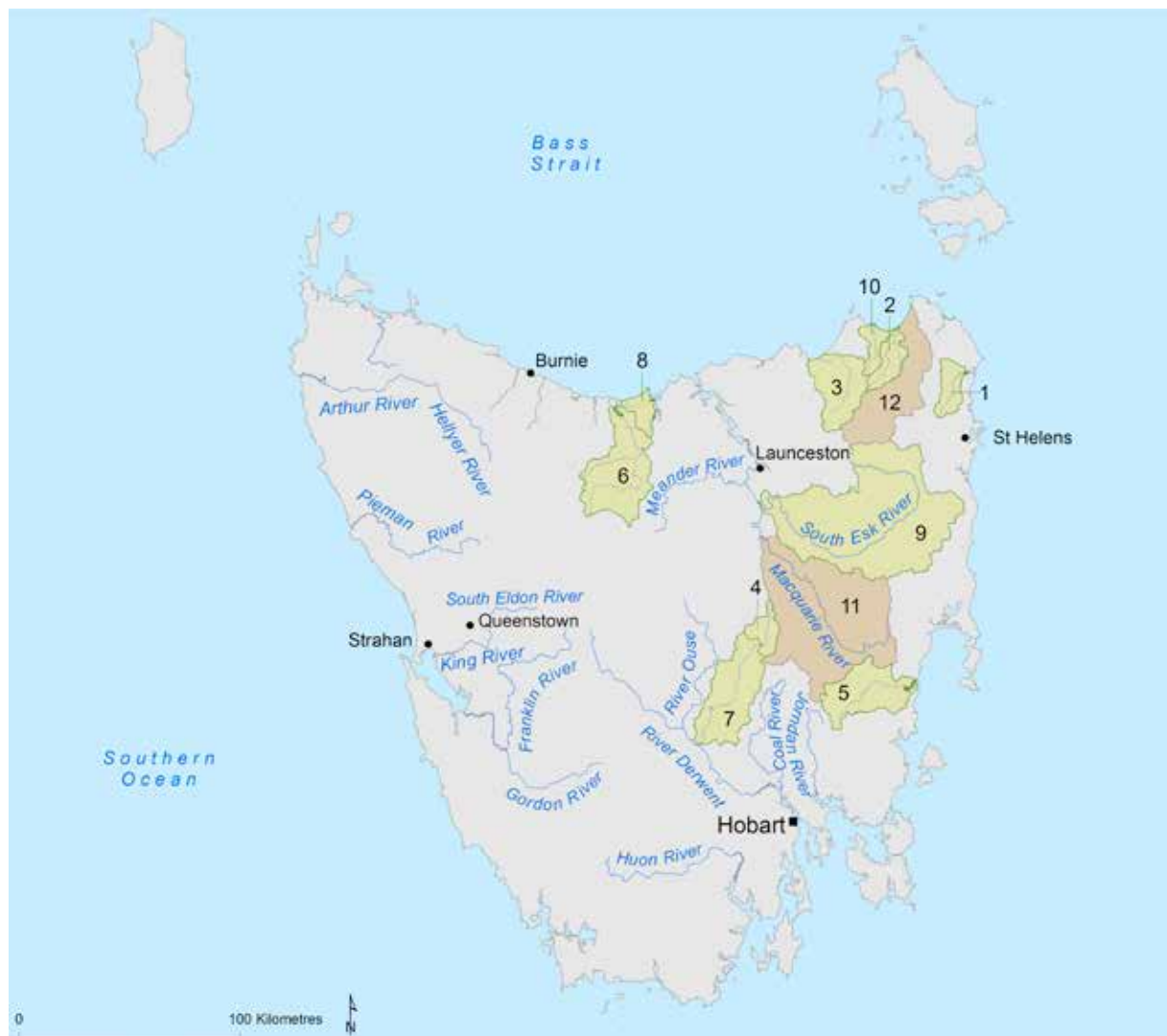
10. Do plans deal appropriately with climate change and extremes in inflows or recharge?	Accounting for the long-term effects of climate change has improved in some recent plans. Tasmania allocates water taking into consideration future climate and water yield, using hydrological modelling that reflects the results of CSIRO Tas SY and Climate Futures for Tasmania outcomes. A number of Tasmania's WMPs exhibit conservatively determined water allocation limits to provide a buffer in light of future climate change impacts.
11. Is stakeholder engagement in the planning process adequate?	Planning processes exhibit very effective stakeholder engagement strategies and encompass a range of mechanisms to enable all stakeholders to participate in plan development. These comprise several formal and informal activities, including the formation of a consultative group, public meetings and communication of supporting scientific assessments. Positive stakeholder relations have underpinned some user-driven initiatives in the planning process.
12. To what extent have identified outcomes been achieved during the reporting period?	It is not possible to assess the extent to which plan objectives are being met. Public annual plan effectiveness reporting is not required and while key monitoring data is accessible on WIST, limited interpretation is available in relation to plan objectives. Tasmania advises that it intends to start publicly available reporting on water regime outcomes. Diversion of resources has meant that scheduled plan reviews since 2007 are on hold, although some reviews have begun.

Glossary and abbreviations

Term	Acronym	Definition
Climate Futures for Tasmania		Study that generated climate projections across the state for input into planning processes.
Conservation of Freshwater Ecosystem Values	CFEV	The CFEV project completed an audit and conservation evaluation of the state's freshwater-dependent values to identify aquatic values and prioritise management for DPIPWE.
CSIRO Tasmania Sustainable Yields Project	CSIRO Tas SY	The 2009 CSIRO Tas SY Project developed assessment of current and likely future extent and variability of surface water and groundwater resources in Tasmania.
Department of Primary Industries, Parks, Water and Environment	DPIPWE	Agency responsible for implementing the Water Management Act, and managing and protecting the state's water resources.
Enforcement Policy for the <i>Water Management Act 1999</i>		Principles, criteria and measures that DPIPWE use to enforce the provisions of the Water Management Act.
Groundwater-dependent ecosystem	GDE	Ecosystems that depend on groundwater for their existence and health.
Resource Management and Planning System	RMPS	Government's policy to build sustainable development principles into key resource management legislation.
Standard operating procedures for the development of statutory water management plans in Tasmania	SOPs	Procedures to help new and current water management planners implement a planning process consistent with the Water Management Act.
Water Information System of Tasmania	WIST	Online database of continuous monitoring information, published documents, CFEV results, and entitlement information.
<i>Water Management Act 1999</i>	WMA	The Water Management Act provides the legislative basis for the planning, regulation, management, protection and allocation of water resources and provides for the development of water management plans.
Water management plan	WMP	The water management plan is the statutory water sharing plan made under the Water Management Act.

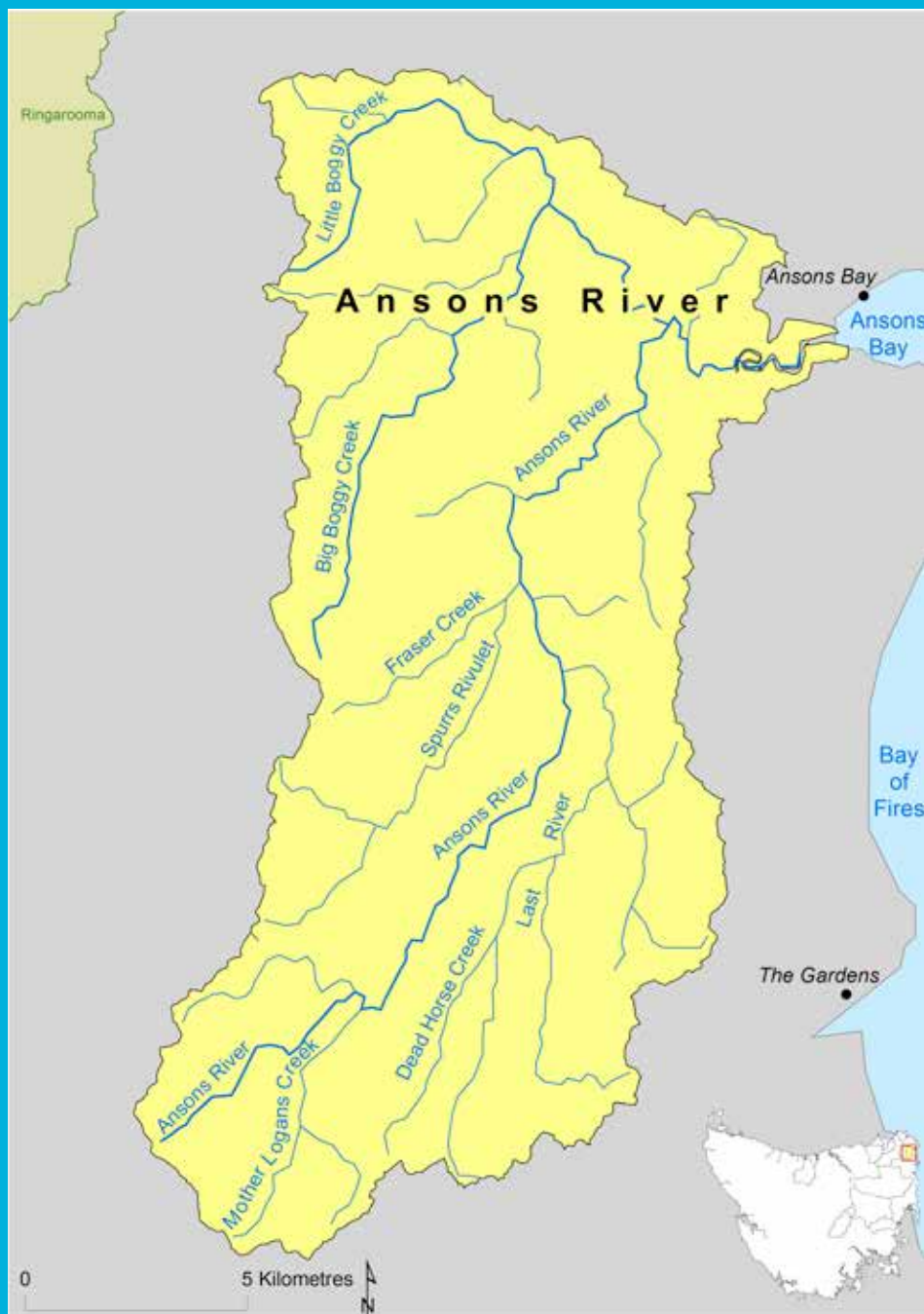
Planning areas

Tasmania



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ANSONS RIVER CATCHMENT WATER MANAGEMENT PLAN 2010



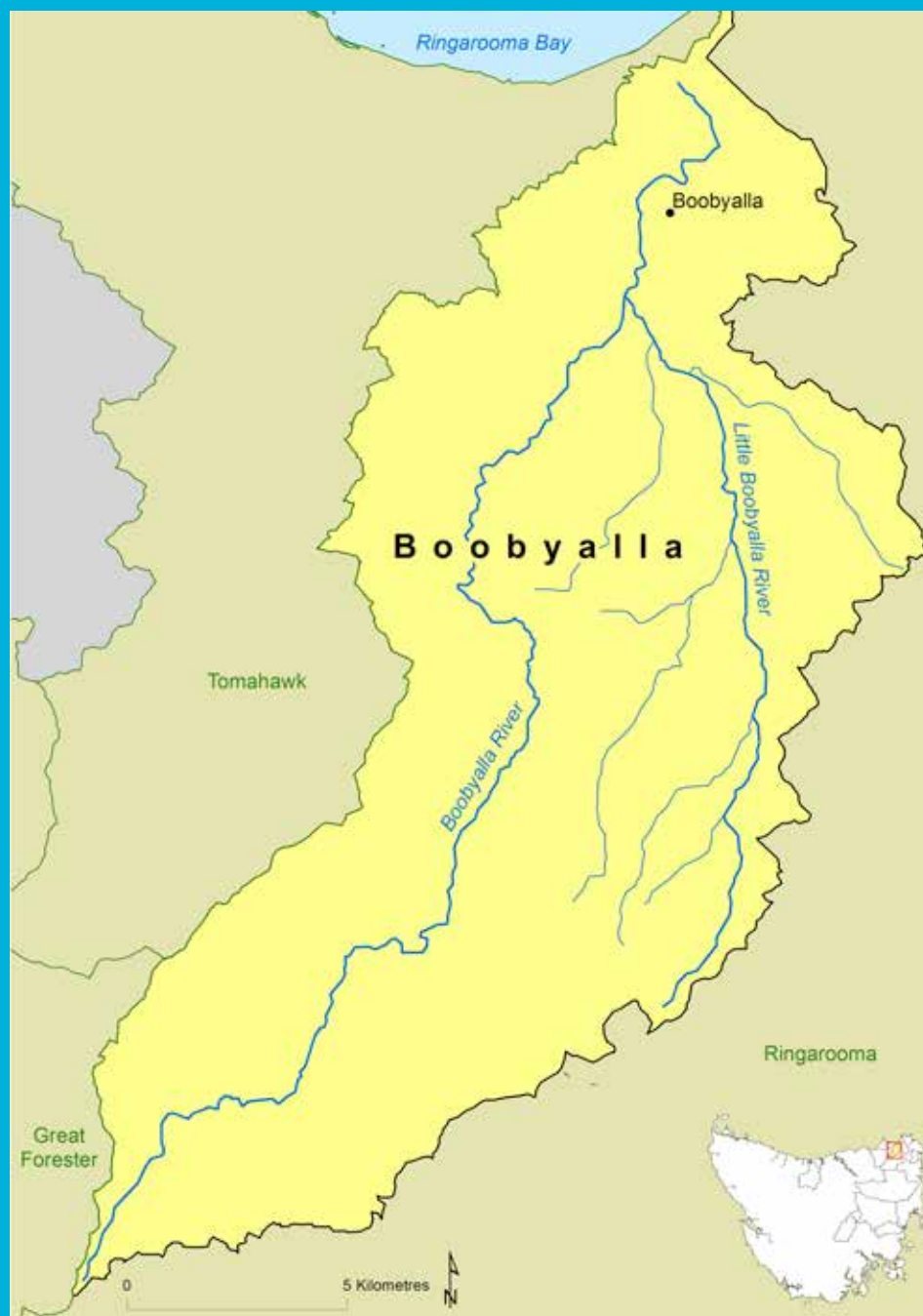
Context

The *Ansons River Catchment Water Management Plan* covers surface water and groundwater resources in the Ansons River catchment in north-east Tasmania. Land use in the catchment is primarily hardwood and softwood forestry, with some dryland grazing for livestock. Water use is low and limited to stock and domestic purposes on small rural holdings. Since the plan's development, no water licences have been issued in the catchment. Groundwater usage is minimal and there are no records of bores installed within the catchment. Ansons River is an unregulated river system with a strong seasonal flow pattern, with the highest flows occurring over winter from May to October. The flow regime is largely natural and the condition of the aquatic ecosystem is near to pristine. The rationale for plan development is primarily for development purposes. Implementing a WMP provides the opportunity to preserve the existing ecosystem values while enabling future use and development of the water resources.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The WMP commenced in July 2010 and is scheduled for review 10 years after taking effect. The plan covers surface water and groundwater resources.
2. Does the plan include key assessments?	To some extent	Hydrological and environmental assessments underpin the plan. Socio-economic assessment is less clear although the catchment has a low level of development and very minimal groundwater use. Environmental risk is discussed in the assessment and plan, resulting in measures that maintain a low level of risk for the environment.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Overuse is not identified by the plan and allocation limits are established at subcatchment level to sustainably manage the resource. Daily cease-to-take thresholds are set conservatively to protect baseflows. The plan provides for the review of licensing arrangements for stock and domestic use – if that use were to reach unsustainable levels.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies environmental, water usage and development and social objectives. The relationship between streamflow and relevant objectives is discussed but monitoring arrangements are not stated for objectives unrelated to streamflow.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade. The plan supports both temporary and permanent trade and transfer applications are assessed by DPIPWE. Groundwater use is not licensed in the catchment and is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	Yes	Interception by forestry and farm dams is considered in the plan and the level of detail is commensurate with current low levels of development. Anticipated stock and domestic use is estimated.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	The plan recognises surface water and groundwater connectivity, aiming to sustainably manage groundwater use and minimise impacts on connected surface water.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental watering arrangements are given considerable attention in the plan. Flow management rules in the form of daily cease-to-take thresholds and allocation limits protect key characteristics of the natural flow regime required to maintain environmental values.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Streamflow data and allocation records are ongoing and publicly available and groundwater is not monitored in the catchment. Compliance records are maintained by DPIPWE. The plan commits to annual effectiveness reporting but there is no requirement for it to be publicly available. The plan assumes achievement of all social objectives through the flow regime.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan acknowledges risks to the availability of water under both seasonal variability and climate change. It establishes allocation limits at conservative levels to provide a buffer for climate change in the absence of specific scientific data.
11. Is stakeholder engagement in the planning process adequate?	Yes	Given the low level of development and the absence of licensed water users in the catchment, the level of stakeholder engagement is adequate.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Some monitoring data is available on WIST but it provides limited opportunity to evaluate plan objectives. The plan commits to annual effectiveness reporting but is not required to be publicly available and other public reporting is not plan specific.

BOOBYALLA RIVER CATCHMENT WATER MANAGEMENT PLAN 2012



Context

The Boobyalla River catchment is located in Tasmania's north-east and begins in the southern foothills of Mount Horror before discharging into Ringarooma Bay. Land use in the upper and middle reaches of the catchment is dominated by forestry plantations, with an area to the south-east cleared for cropping and grazing. Consumptive water extraction and use was relatively low at the time of plan development and limited to stock or irrigation use on small rural holdings. Much of the Boobyalla River is an unregulated river system in a relatively natural condition that exhibits a strong seasonal flow pattern. The majority of developed land in the southern reaches of the catchment is supplied with water from the Winnaleah Irrigation Scheme and further schemes are proposed in the region. The Boobyalla River Catchment WMP aims to ensure the catchment's freshwater resources are managed sustainably to provide for water-dependent environmental values and productive capacity into the future.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The Boobyalla Catchment WMP took effect in October 2012 and applies to the management of all surface water and groundwater in the catchment. The plan will undergo review after its 10th year of adoption.
2. Does the plan include key assessments?	To some extent	Key assessments to inform the drafting of the plan were based on a hydrological model and a risk-based approach to calculate the required environmental flow provisions to protect the identified assets. Minimal socio-economic information was identified, but the number of licensed users in the catchment is relatively small.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	The plan does not identify overuse. The direct-take allocation limit has been reached and the plan identifies further scope for the issue of new storage allocations at lower surety levels. Allocations are determined at low levels of risk to the environment, seeking to maintain key characteristics of the natural flow regime. The plan does acknowledge one management zone exceeds allocated limits.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies environmental, water usage and development and social objectives. The monitoring regime focuses on streamflow data and the plan discusses the relationship between streamflow and relevant objectives. Other monitoring is subject to resources.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade. The plan supports both temporary and permanent trade and transfer applications are assessed by DPIPWE. Groundwater is not licensed in the catchment and is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	Yes	Intercepting activities identified in the catchment are plantation forestry and stock and domestic use. Stock and domestic use is estimated within the plan and while the CSIRO Tas SY project identified a small increase in plantation forestry, the effect on regional yield is stated as low.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The plan acknowledges connectivity between surface and groundwater resources and groundwater is managed consistent with regulatory requirements. The plan operates under the premise that by retaining the key characteristics of the natural flow regime, groundwater flows and levels critical to surface water flows should be maintained within the bounds of natural variability.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental water is protected by access rules and allocation limits based on studies of the natural flow regime. The plan provides for a minimal departure from the natural flow regime, which DPIPWE considers appropriate to maintain a low level of risk to the environment while providing reliable access to water for consumptive purposes.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Allocation records, streamflow data and restriction management information are ongoing and publicly available. Groundwater is monitored in adjacent catchments. Records are maintained for compliance measures including meter installation, surface water extraction and trades. The plan commits to annual effectiveness reporting although there is no requirement for its public availability.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Climate change impacts are considered and the plan states that as allocation limits are approached, they will be reviewed with the opportunity to make an assessment in light of climate change and more specific environmental factors. Risks to reliability under climate change and climate variability are broadly described.
11. Is stakeholder engagement in the planning process adequate?	Yes	Through formal and informal mechanisms, stakeholder consultation has been comprehensive and some feedback has been included in the draft plan. A formal meeting of key stakeholders was held, public submissions on the draft plan were formally provided and the response process was transparent.
12. Have identified outcomes been achieved during the reporting period?	Unable to assess	It is unclear whether plan objectives are being achieved. Some monitoring data is available on WIST, but it provides limited opportunity to evaluate plan objectives. The plan commits to annual reporting and this will not be considered until the 2013–14 irrigation season concludes. This information is not required to be publicly available.

GREAT FORESTER CATCHMENT WATER MANAGEMENT PLAN 2003



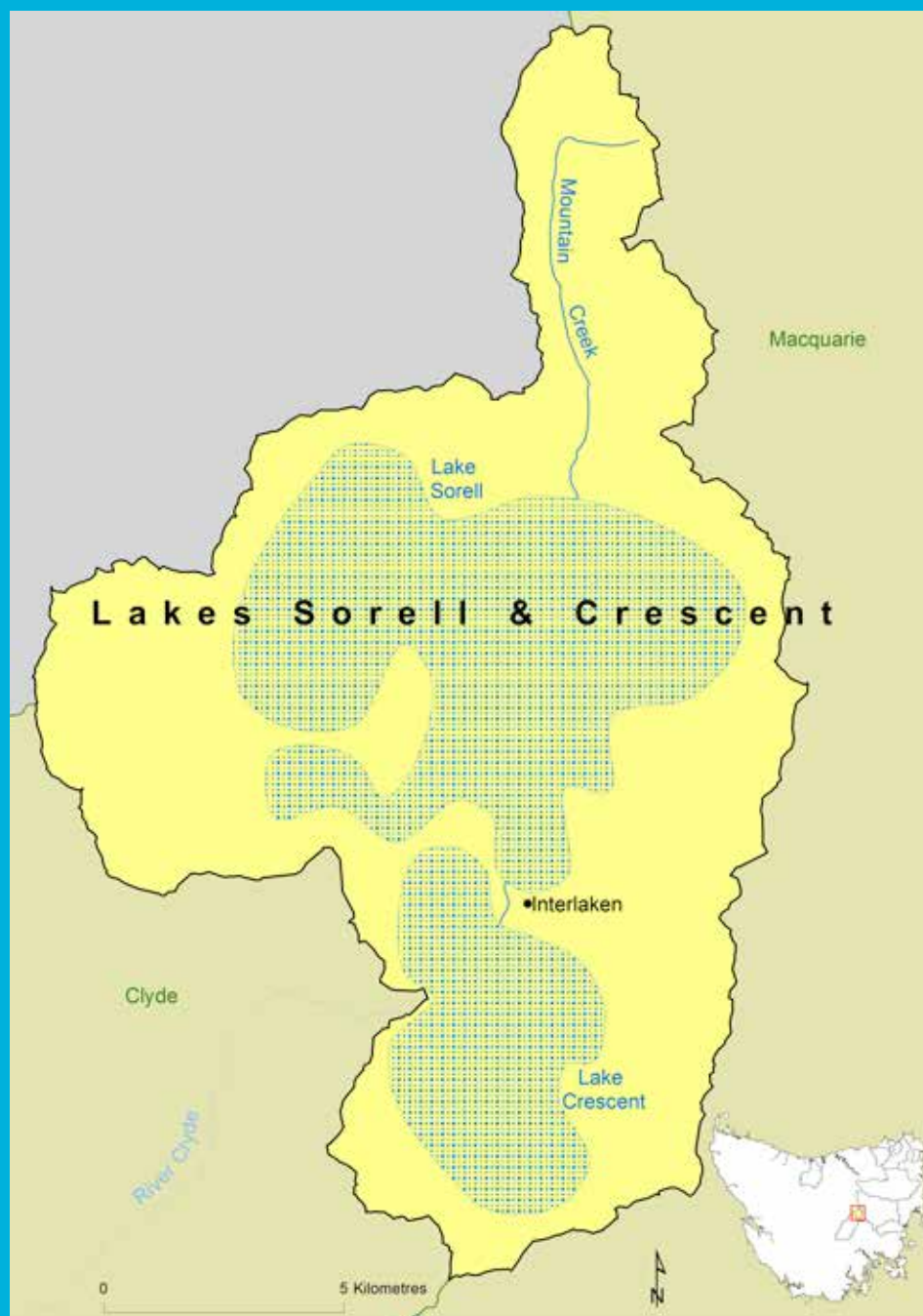
Context

The Great Forester Catchment WMP was the first plan to commence in Tasmania in 2003. Great Forester River is located in north-east Tasmania and has a strongly seasonal flow pattern, with flow peaking from July to September. The unregulated system has been subject to water extractions primarily for irrigation purposes since the 1970s. Extractions occur along the length of the river system with the exception of the uppermost tributaries. Information is limited on the reasons for prioritisation of the Great Forester catchment for water planning, although there are indications that increasing competition for water resources for agricultural purposes was the key driver. TI's Great Forester Irrigation Scheme began operating in 2011–12 to service irrigated agricultural demand in the area.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The Great Forester Catchment WMP took effect in 2003 and covers surface and groundwater resources within the plan area. Plan review commenced in 2007.
2. Does the plan include key assessments?	To some extent	Key assessments were undertaken to inform plan development and additional economic and environmental assessments were completed as part of the review. Groundwater-dependent ecosystems (GDEs) are not identified. A risk assessment was completed to test the provisions of the plan in maintaining habitat for significant taxa.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	To some extent	Overuse is not identified and the plan manages risk through a precautionary approach by restricting water use and the issue of new Surety Level 5 licences until plan review quantifies effectiveness. Decisions about trade-offs in setting the extraction limits are not publicly available.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The objectives of the plan mirror those of the WMA 1999. Environmental, water management and land use monitoring was undertaken to inform the review of the effectiveness of the plan's provisions in 2007. The relationship between flow and relevant objectives is discussed.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade. The plan supports both temporary and permanent trade and transfer applications are assessed by DPIWWE. The plan makes provision for groundwater licensing but this has not yet occurred and groundwater is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The initial plan background documents identified plantation and production forestry to be a major land use in the catchment and small tin mines are present. The plan did not quantify the impacts of these intercepting activities or stock and domestic use.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The plan covers surface water and the highly connected groundwater resources and management provisions include the requirement for groundwater licensing within five years of plan commencement. To date, this has not occurred despite studies undertaken for the 2006 review that identify anticipated increased demand in groundwater due to restrictions associated with further surface water development.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Surface environmental water provisions include restriction management and allocation limits, based on ecological studies and achieving acceptable risk levels related to inundation extent for significant biota. Restriction management was initially only applied during summer and the review was required to re-assess flow requirements for the whole year.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Streamflow, groundwater levels and allocation monitoring is ongoing and available publicly on WIST. Compliance records are maintained. While additional studies were completed to inform the 2007 review, it is unclear whether the plan's detailed environmental and land use monitoring regime continues to be fulfilled. The plan commits to annual administration and interim monitoring assessment reporting although these are not publicly available.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Climate variability is considered and managed under the plan through restriction management with streamflow triggers. There was no evidence that long-term climate change had been considered.
11. Is stakeholder engagement in the planning process adequate?	Yes	DPIWWE and the Great Forester Catchment Water Management Planning Consultative Group prepared the draft plan. It stipulates stakeholder involvement during the plan's implementation and at the three-year plan review.
12. Have identified outcomes been achieved during the reporting period?	To some extent	It is unclear whether plan objectives are being achieved. Some monitoring data is available on WIST, but it provides limited opportunity to evaluate plan objectives. Annual reporting required by the plan is not available and other public reporting is not plan specific. Implementation of groundwater licensing in the catchment, due in 2009, has not occurred. The 2007 review was started but is now on hold.

LAKES SORELL AND CRESCENT WATER MANAGEMENT PLAN 2005



Context

The Lakes Sorell and Crescent WMP covers surface water and groundwater in the Lakes Sorell and Crescent catchment, and was developed in parallel with the connected River Clyde WMP. The plan area is located in the driest region in Tasmania and has two major storages: Lake Sorell and Lake Crescent. The area contains Ramsar-listed wetlands. Water levels in both lakes are regulated and flow in the River Clyde is managed at the Lake Crescent outlet to supply water for irrigation and domestic purposes. Land use in the catchment is predominantly agricultural and the water resource is considered to be fully allocated. The key driver behind water planning in the area is low water levels in the lakes, as a result of the dry climatic conditions and the high competition between users – primarily irrigated agriculture and recreational fisheries. The plan aims to address the high competition between users and declines in fisheries, water quality and ecological values.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The Lakes Sorell and Crescent WMP commenced in November 2005 and covers water resources within the Lakes Sorell and Crescent catchment, including all permanent and temporary watercourses, wetlands, lakes and groundwater. Plan review was due in 2009.
2. Does the plan include key assessments?	To some extent	The plan was informed by several key assessments, including some economic reporting and a water balance model. Risk is discussed throughout these reports, particularly in respect of the environment. Groundwater assessment was not identified.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan identifies the system is fully allocated but not overused. Allocations and restrictions are based on lake height. Both lakes have preferred and critical minimum levels, with exceptions and restrictions on drawing the lakes down further.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan identifies water quality, commercial, social and specific environmental aims and objectives. The relationship between streamflow and relevant objectives is discussed and performance indicators for social objectives, throughout the life of the plan, are clearly articulated.
5. Does the plan facilitate trade?	Yes	The plan does not discuss trade. The WMA 1999 provides for water trade and the plan, subject to the Act, supports both temporary and permanent trade. The plan makes provision for groundwater licensing but this has not yet occurred and groundwater is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Interception activities were not explored in detail during plan development, although the CSIRO Tas SY report stated the potential for plantation forestry development was low (with resulting minimal impact on run-off). Subsequent development of the Water Availability and Forest Landuse Planning Tool (WAFL) for forestry interception, as well as regulatory measures for new farm dams and bores, provides improved capacity to estimate interception impacts.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan covers both surface and groundwater resources. The plan makes provision for a groundwater register – addressed in part by the 2011 <i>Groundwater information access portal</i> and the more recent well permit and well driller's licence regulations. The plan allows for groundwater licensing, which has not been implemented. Links to the connected River Clyde surface WMP are clearly established.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Maintaining the lakes at specified levels protects environmental water and lake manipulation aims to be consistent with natural seasonal changes. If demand exceeds supply, restrictions occur gradually for the environment and users. In exceptional circumstances and in accordance with strict conditions, the lakes may be drawn down below critical minimum levels.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Ongoing streamflow data and allocation records are publicly available and compliance records are maintained. Groundwater is not monitored. It is unclear whether detailed environmental and hydrological monitoring continues to be fulfilled, although comprehensive assessments were undertaken to inform the commenced 2009 review. It is unclear whether the plan's commitment to annual plan administration reporting has been met, as there is no requirement for its public availability.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The seasonal availability of water is assessed using a water availability model in an effort to deal with climate variability. Long-term climate change was not considered during the plan's development. The impacts of climate change scenarios on water yield have been assessed as part of the CSIRO Tas SY, but the results are yet to be included in the plan.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder consultative group was formed during drafting of the WMP and is required to be engaged at plan review. DPIPWE set plan objectives and supported the consultative group to understand complex information. DPIPWE accepted and responded to submissions on the draft plan.
12. Have identified outcomes been achieved during the reporting period?	To some extent	It is unclear whether plan objectives are being achieved. Some monitoring data is available on WIST, but it provides limited opportunity to evaluate plan objectives. Annual reporting required by the plan is not available and other public reporting is not plan specific. The 2009 review was started but is now on hold.

LITTLE SWANPORT CATCHMENT WATER MANAGEMENT PLAN 2006



Context

The Little Swanport Catchment WMP commenced in 2006 and applies to an area located on the state's east coast. Rainfall across the catchment is comparatively low compared with the rest of Tasmania, and has a moderate level of seasonal variability. Land use across the catchment includes agriculture in the western and eastern regions and production forestry in the northern region. Water planning in the area was prioritised in 2003 due to community concern about the impacts of a proposed irrigation storage, the potential effects of irrigation on water quality, and the perceived lack of reliable information on the sustainable yield.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan took effect in July 2006 and covers all surface water and groundwater resources within the catchment. Plan review was due in July 2011.
2. Does the plan include key assessments?	Yes	Key assessments of social and economic values were completed before plan finalisation and a water balance model developed. Limited information was available on GDEs and groundwater connectivity. Risk is discussed throughout the assessments and environmental flows were established to maintain a low level of risk to the environment.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	Overuse is not identified in the plan and allocations were increased under plan provisions. The cease-to-take thresholds for summer and winter protect minimum environmental flows.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies environmental, water usage and development, and social objectives. The monitoring regime gives focus to streamflow data and the plan discusses the relationship between streamflow and relevant objectives.
5. Does the plan facilitate trade?	Yes	The plan does not discuss trade. The WMA 1999 provides for water trade and the plan, subject to the Act, supports both temporary and permanent trade. Groundwater is not licensed in the catchment and therefore is not tradeable.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan investigated the impact of farm dams on streamflow. Other intercepting activities, such as forestry, were not quantified. Significant changes in land use were noted in the plan, requiring the re-calibration of the water balance model.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan covers both surface and groundwater resources and groundwater use is stated as low. The plan makes provision for a groundwater register, which is addressed in part by the 2011 <i>Groundwater information access portal</i> and the more recent well works permit and well driller's licence regulations. The plan allows for groundwater licensing, which has not been implemented.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Cease-to-take provisions protect environmental water. These are based on seasonal minimum streamflow thresholds and allocation limits to protect the flow regime. These rules are underpinned by environmental water requirement assessments (based on maintaining low levels of risk to the environment) and are monitored using gauging stations.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Streamflow data and allocation records are ongoing and publicly available. Groundwater monitoring and limited water quality data are also available on WIST, but the plan does not specify annual reporting. Additional compliance records are maintained and registered bores are detailed on the <i>Groundwater information access portal</i> . There is no indication of monitoring of social objectives.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Climate variability is considered and managed under the plan through the use of restriction management. Long-term climate change was considered in the plan's development. There was a lack of flow records at the time of plan drafting but since then, the impacts of climate change scenarios on the catchment's water yield have been assessed as part of the CSIRO Tas SY.
11. Is stakeholder engagement in the planning process adequate?	Yes	DPIPWE prepared the plan with the support of a consultative group, which will be re-engaged at plan review. Public meetings were held to support the consultation process. DPIPWE responded to all public submissions on the draft plan.
12. Have identified outcomes been achieved during the reporting period?	To some extent	It is unclear whether plan objectives are being achieved, although some progress is noted in groundwater management. Some monitoring data is available on WIST, although it provides only limited opportunity to evaluate plan objectives. Available public reporting is not plan specific. The plan review due in 2011 is on hold.

MERSEY WATER MANAGEMENT PLAN 2005



Context

The Mersey River catchment is located in north-central Tasmania and is defined by the drainage system of the Mersey and Don rivers. The Mersey River discharges into Bass Strait through Devonport. Water in the catchment is used to support hydro-electric generation, forest harvesting, extensive agriculture and the Wesley Vale pulp mill. Part of this catchment is situated in a hydro-electric district and Hydro Tasmania has statutory rights to all water in the district, with the exception of water for town use, stock and domestic, resource-dependent ecosystems and water allocated under licences. Community concerns in the 1990s about low river flows and the apparent deterioration of the middle Mersey led to the WMP's development.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The Mersey WMP came into effect in 2005 and covers the management of surface water and groundwater in the Mersey catchment's north. Plan review is scheduled 10 years after taking effect.
2. Does the plan include key assessments?	To some extent	No hydrological model was linked to the plan. Socio-economic assessments were completed pre-plan. Environmental assessments were completed but gaps exist in relation to the assessment of the GDEs in the Karst system. Environmental flows were determined to maintain a low level of risk.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan does not identify overuse. The allocation limit is defined for the winter-take period and additional allocation is available. The allocation limit for the summer-take period is based on 2003–04 development levels. No further allocations will be issued for this period. Monthly cease-to-take limits are specified to protect baseflows.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies environmental, water usage and development, and compliance and monitoring objectives. The monitoring regime gives focus to streamflow data and the plan discusses the relationship between streamflow and relevant objectives.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade and the plan, subject to the Act, supports both temporary and permanent trade. DPIPWE assesses transfer applications and Hydro Tasmania's consent to transfer is required. Groundwater use is not licensed in the catchment and is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Intercepting activities were not identified as an issue during plan development and forestry, stock and domestic use and small quarries are key intercepting factors. The subsequent CSIRO Tas SY report identified an increase in forestry generating a relatively low impact on run-off under a median future climate scenario. New dam development is now regulated through the requirement for dam permits.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan states that it conjunctively manages surface water and groundwater resources in the area, however there is no active management of groundwater or the identified Mole Creek Karst GDEs. Groundwater take is not licensed in the area.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental water is protected through high-reliability daily passing flows and cease-to-take provisions. To maintain the key characteristics of the natural flow regime, a low level of risk is maintained for the environment through the establishment of access rules and allocation limits.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Allocation records, groundwater level, streamflow and management information are ongoing and publicly available, and compliance records are maintained. It is unclear whether the comprehensive ecological monitoring program and associated reporting continues to be undertaken. In the absence of this reporting, it is unclear how some compliance and monitoring objectives are being measured.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	Climate variability is considered and managed under the plan through the use of restriction management and streamflow triggers. Although the impacts of climate change scenarios have been assessed as part of the CSIRO Tas SY, long-term climate change was not considered in the plan's development.
11. Is stakeholder engagement in the planning process adequate?	Yes	DPIPWE prepared the plan with a consultative group that provided input into plan outcomes and will be re-engaged at the 10-year review. DPIPWE responded to stakeholder submissions during drafting of the plan. Indigenous groups were not referred to in the consultation documents despite the identification of cultural sites within the area.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Some monitoring data is available on WIST, but it provides limited opportunity to evaluate plan objectives. Available public reporting is not plan specific. Results and reporting for the comprehensive environmental monitoring outlined in the plan are not publicly available.

RIVER CLYDE WATER MANAGEMENT PLAN 2005



Context

The River Clyde catchment is located in the driest region of central Tasmania and has two significant storages, Lake Sorell and Lake Crescent. The River Clyde WMP covers surface water and groundwater from the control structure at Lake Crescent down to the junction with Lake Meadowbank, which also includes a substantial area covered by the River Clyde Irrigation District. This catchment is situated in a hydro-electric district and Hydro Tasmania has statutory rights to all water in the district, with the exception of water for town and stock and domestic use, resource-dependent ecosystems and water allocated under licences. The plan was developed in parallel with the Lakes Sorell and Crescent WMP, and water use in the lakes and River Clyde had long been a subject of debate between stakeholders, such as recreational fishers and irrigators.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan commenced development in 2000 and was implemented in November 2005. It covers all water resources in the catchment and was developed in parallel with the Lakes Sorell and Crescent WMP. Plan review was due in 2009.
2. Does the plan include key assessments?	To some extent	Hydrological, social, economic and environmental assessments have been undertaken. Environmental risk is explored at length in quantifiable terms to inform the plan, although social assessment is more descriptive.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan does not identify overuse. The sustainable level of extraction, while not explicitly stated is provided for through operational guidelines, supported by environmental monitoring arrangements. The plan indicates the system is fully allocated and minimum environmental flows are protected by monthly cease-to-take thresholds and provision of minimum lake flows.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The objectives of the plan mirror those of the WMA 1999 and include environmental, development and social aspirations. The monitoring regime gives focus to streamflow data and the plan discusses the relationship between streamflow and relevant objectives.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade. Accordingly, the plan supports both temporary and permanent trade. DPIWE assesses transfer applications and Hydro Tasmania's consent to transfer is required. Groundwater use is not licensed in the catchment and is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Intercepting activities were not identified as an issue during plan development and forestry, stock and domestic use and small quarries are key intercepting factors. The subsequent 2009 CSIRO Tas SY report identified an increase in forestry generating a relatively low impact on run-off under a median future climate scenario. New dam development is now regulated through the requirement for dam permits.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan covers both surface and groundwater resources and no significant groundwater was identified in the catchment. The plan makes provision for a groundwater register, which is addressed in part by the 2011 <i>Groundwater information access portal</i> and the more recent well permit and well driller's licence regulations. The plan allows for groundwater licensing, which has not been implemented. Links are made to the Lakes Sorell and Crescent WMP.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental water is protected through cease-to-take provisions based on monthly trigger streamflows to preserve low flows and maintain a moderate level of risk to the environment (monitored using gauging stations). The plan links to the upstream Lakes Sorell and Crescent WMP and environmental objectives are linked to management arrangements, although no water released from the lakes is used for environmental flows.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Streamflow data, allocation records and management activity monitoring is ongoing and publicly available. Additional compliance records are maintained and groundwater is not monitored in the plan area. The impact of cease-to-take rules has not been assessed as plan review is on hold. It is unclear whether annual monitoring reporting to the Minister is occurring – as this information is not required to be publicly available – or whether the detailed environmental monitoring program continues to be fulfilled.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	To some extent	The plan considers climate variability by operating monthly flow guidelines. The guidelines were established under two climatic conditions (average and dry), with a trigger level to distinguish between the seasons. Long-term climate change was not considered in the plan's development.
11. Is stakeholder engagement in the planning process adequate?	Yes	A stakeholder consultative group was formed during drafting of the WMP. The group is required to re-engage at plan review. DPIWE accepted and responded to stakeholder submissions on the draft plan but the outcomes of the consultation were disputed.
12. Have identified outcomes been achieved during the reporting period?	To some extent	It is unclear whether plan objectives are being achieved. Some monitoring data is available on WIST, but it provides limited opportunity to evaluate plan objectives. Some progress in groundwater management is noted. Available public reporting is not plan specific. The plan review due in 2009 is on hold.

SASSAFRAS WESLEY VALE WATER MANAGEMENT PLAN 2012



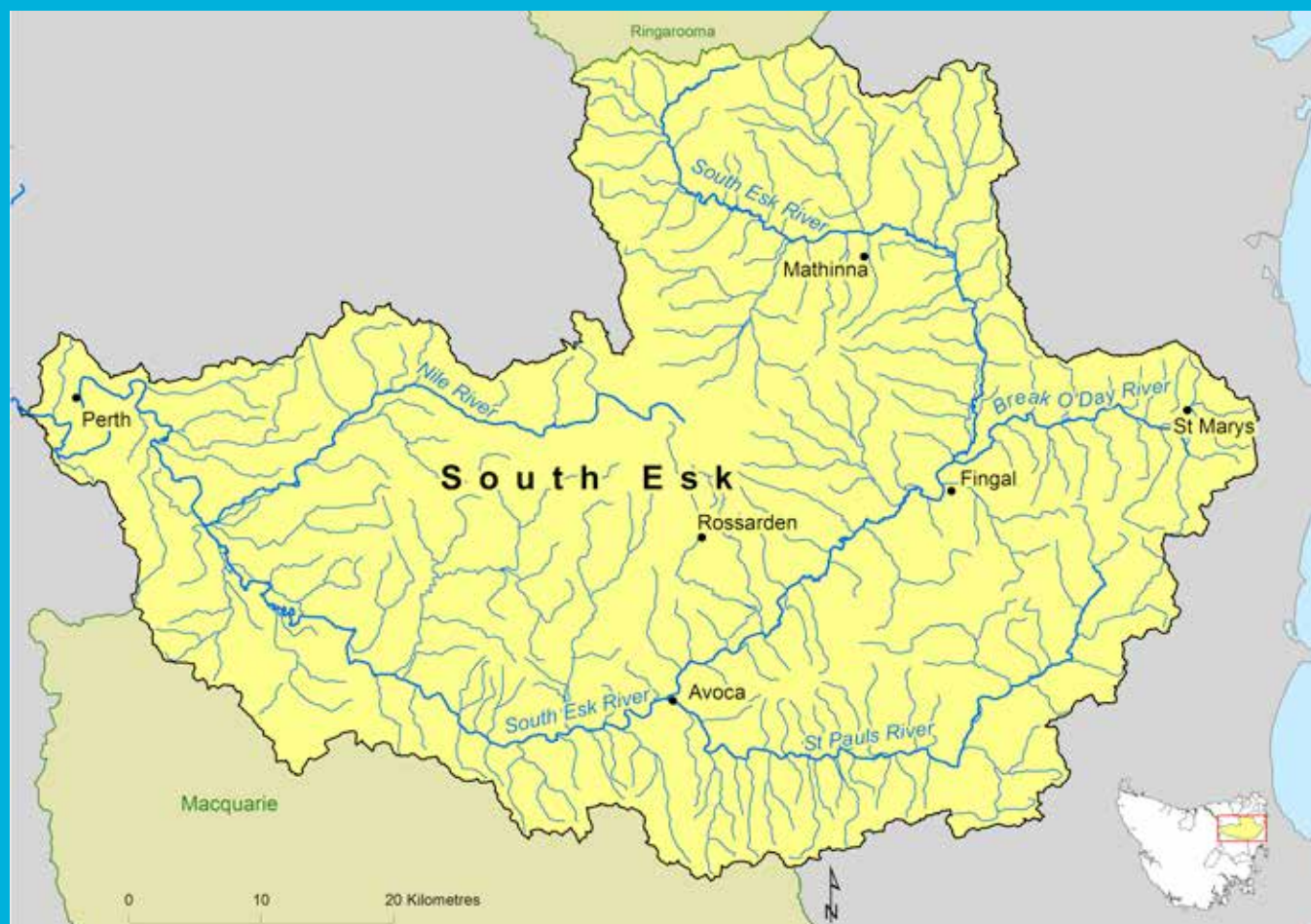
Context

The SassafRAS Wesley Vale area is located in the state's north and is part of a broader region characterised by high agricultural water use. The area is recognised for its intensity of agricultural production and most of the land is used for irrigated agriculture. Similar to other catchments in northern Tasmania, the area's surface water hydrology is characterised by high flows in winter and very low flows in summer. About 90 per cent of the annual surface water yield in the area occurs during winter. Several dams have been constructed to capture and store the more reliable winter flows, resulting in a highly modified system. Low-flow periods during summer have also led to a greater reliance on groundwater by irrigators. In recognition of the generally intensive use of groundwater in the region, the SassafRAS Wesley Vale groundwater area was appointed by the Minister in July 2012. The commercial extraction of groundwater is required to be licensed to sustainably manage the resource. The SassafRAS Wesley Vale Irrigation Scheme delivers water to the area, sourced from the Mersey River. This plan aims to ensure the catchment's freshwater resources are managed sustainably to provide for water-dependent environmental values and productive capacity into the future.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan was adopted in January 2012 and took effect in October 2012. It applies to the management of all surface water and groundwater in the plan area and will undergo review after its 10th year of adoption.
2. Does the plan include key assessments?	To some extent	Key hydrological and environmental assessments were undertaken during development of the draft plan for both surface water and groundwater resources. Water use surveys were conducted to gather information during preparation of the draft plan. Social and economic assessments appear limited.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify overuse. The plan acknowledges full allocation of most streams for the summer-take period and new allocations for the winter-take period will be issued at lower surety levels. To sustainably manage groundwater extraction, Sassafras Wesley Vale is Tasmania's first appointed groundwater area and requires licensing of commercially extracted groundwater. Restriction measures and groundwater thresholds are specified to preserve groundwater at historical levels and cease-to-take triggers are imposed to preserve surface water baseflows.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies environmental, water use and development, and social objectives. The monitoring regime gives focus to streamflow data and the plan discusses the relationship between streamflow and relevant objectives.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade. The plan supports both temporary and permanent trade and DPIWE assesses transfer applications. Groundwater is licensed in the catchment and is therefore tradeable.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The effect of future forestry interception on run-off in the Mersey-Forth region was assessed as low. Stock and domestic use and the impacts of a large number of farm dams in the plan area are identified and the take is estimated.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Technical assessment indicates connectivity is high in the plan area. This is recognised in plan objectives and associated risks are appropriately discussed. Groundwater restriction provisions aim to maintain groundwater levels within historical thresholds, recognising groundwater contribution to most surface water baseflows in the area. Impacts to connected surface water resources are also minimised by restriction measures for wells in close proximity to watercourses.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan clearly identifies environmental objectives, which are linked to provisions for allocation limits and restriction management. Cease-to-take provisions are based on river level thresholds where the taking of water is prohibited when these flow levels are reached.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	Allocations, streamflow and groundwater-level monitoring and data are ongoing and publicly available. Officially appointed as a groundwater area in July 2012, compliance records are maintained including meter installation, surface and ground water extraction, trades and restriction management. The plan commits to annual reporting on its effectiveness, although its public availability is not required. The plan assumes achievement of some social objectives through plan development processes.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Climate variability and climate change impacts were considered during plan development although plan measures addressing long-term climate change are not specifically stated. The CSIRO Tas SY predicted the effects of climate change in the Mersey-Forth region would be relatively low under a median climate change scenario.
11. Is stakeholder engagement in the planning process adequate?	Yes	Through formal and informal mechanisms, stakeholder consultation has been comprehensive. Some of the feedback generated was included in the draft plan. Stakeholders contributed to draft plan development through formal consultative workshops. Public submissions on the draft plan were formally provided and the response process was transparent.
12. Have identified outcomes been achieved during the reporting period?	To some extent	The appointment of the Sassafras Wesley Vale groundwater area and associated compliance measures demonstrates some good progress towards meeting plan objectives. Some monitoring data is available on WIST, but it provides limited opportunity to evaluate plan objectives. The plan commits to annual reporting and this will not be considered until the 2013–14 irrigation season concludes. This information is not required to be publicly available.

SOUTH ESK RIVER CATCHMENT WATER MANAGEMENT PLAN 2013



Context

The South Esk River (above its confluence with the Macquarie River) catchment is relatively large in size and located in the north-east and midlands of Tasmania. The predominantly unregulated South Esk River catchment supports a productive agricultural industry, focused on irrigated annual cropping and dryland grazing. In addition, the catchment supports a range of water uses including forestry, mining, recreation and tourism. The catchment is located in the South Esk Hydro-electric District. Hydro Tasmania captures water in Trevallyn Dam at the lower end of the South Esk Basin. The high reliability of winter flows and large annual discharge has led to significant interest in further irrigation development in the catchment. The Lower South Esk Irrigation Scheme is one of several proposed new irrigation schemes. The plan provides for the management of the catchment's freshwater resources and seeks to preserve the river's productive capacity to support a range of water users into the future.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The plan was adopted in June 2013 and will take effect following the 2013–14 irrigation season. It covers management of the catchment's surface water and groundwater and will undergo review after its 10th year of adoption.
2. Does the plan include key assessments?	To some extent	Key assessments undertaken before planning included development of a water balance model, socio-economic studies and identification of environmental assets and condition. Connectivity was not thoroughly investigated. A risk assessment looked at which flow components were needed to maintain the naturalness of the ecosystems.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Overuse is not identified in the catchment. Within plan allocation limits, new allocations require transfer under agreement from Hydro Tasmania – which holds statutory rights to water in this catchment through a special licence. The plan identifies potential volumes of water available for allocation based on environmental and water use and development objectives.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan clearly identifies environmental, water usage and development, and social objectives. The monitoring regime gives focus to streamflow data and the plan discusses the relationship between streamflow and relevant objectives.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade and the plan supports both temporary and permanent trade. DPIPWE assesses transfer applications and Hydro Tasmania's consent to transfer is required. Groundwater use is not licensed in the catchment and is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Intercepting activities identified in the catchment are stock and domestic use, floodplain harvesting, forestry and mining. The risk associated with forestry interception in the Pipers-Ringarooma region is assessed as low.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The system is acknowledged to have surface water and groundwater connectivity. The plan states current groundwater use is not significant and groundwater resources are not licensed at present. Groundwater is monitored in the catchment and the plan allows for review of groundwater licensing arrangements if significant growth in extraction occurs. The plan operates under the premise that by retaining key characteristics of the natural flow regime, the groundwater resource will be adequately protected.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental water is protected by the establishment of allocation limits and access rules specified in the plan. This seeks to preserve key natural flow characteristics such as frequency, duration and rates of rise and fall of intermediate and high-flow events of importance to the environment.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	Data is publicly available for ongoing streamflow monitoring, groundwater levels and allocation records. Records are maintained for compliance measures including meter installation, surface water extraction, trades and restriction management. The plan commits to annual effectiveness reporting although it is not required to be publicly available. The plan assumes achievement of some social objectives through plan development processes.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The plan considers the impacts of climate change and climate variability. Allocation limits are conservatively established, new allocations are issued at lower levels of reliability to preserve certainty, and risks under climate change to the relatively high levels of reliability are broadly described.
11. Is stakeholder engagement in the planning process adequate?	To some extent	Stakeholder consultation was undertaken through formal and informal mechanisms. Angling and tourism representation was excluded from the consultative group which prompted extensive public submission on the draft plan. Public submissions were formally provided and resulted in some plan amendment. The process was undertaken transparently.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The plan will not take effect until after the 2013–14 irrigation season and therefore progress has not been assessed.

TOMAHAWK RIVER CATCHMENT WATER MANAGEMENT PLAN 2012



Context

The Tomahawk River catchment is located in the state's north-east and drains into Ringarooma Bay. Land use in the catchment is dominated by production forestry and dryland agriculture, but small areas of commercial irrigation also occur. The river is unregulated with only a small number of in-stream dams affecting the natural flow. Similar to other catchments in northern Tasmania, surface water hydrology is characterised by high flows in winter and very low flows in summer. While consumptive extraction and water use is assessed as relatively low in the catchment, greater demand in surrounding regions was a key driver for plan development. Much of the catchment retains near-natural condition and the plan aims to strike a balance between protecting freshwater environmental values, enabling future sustainable use and development, and retaining capacity to support a range of water uses into the future.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	The plan took effect in October 2012 and applies to all surface water and groundwater in the catchment. The plan will undergo review after its 10th year of adoption.
2. Does the plan include key assessments?	To some extent	Key assessments undertaken before plan development were based on a hydrological model and a risk-based approach to calculate the required environmental flow provisions to protect the identified assets. There were no social or economic assessments identified, but there are only a small number of users in the catchment (eight licence holders at the time of drafting).
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The plan does not identify overuse. A relatively conservative allocation limit has been established that maintains key characteristics of the natural flow regime. No further summer-take allocations will be issued and new winter-take allocations are available. Monthly cease-to-take thresholds are established to preserve low flows.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan clearly identifies environmental and water usage and development objectives. These are supported by the monitoring regime that gives focus to stream flow data. The plan discusses the relationship between streamflow and relevant objectives and other monitoring is subject to resources.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade. The plan supports both temporary and permanent trade and DPIPWE assesses transfer applications. Groundwater use is not licensed in the catchment and is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Intercepting activities identified in the catchment are plantation forestry and stock and domestic use. Stock and domestic use is estimated within the plan and forestry interception was assessed by the CSIRO Tas SY across the Pipers-Ringarooma region. The impact of forestry expansion on projected run-off, including a proposed pulp mill development, was assessed as low.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	To some extent	The system is acknowledged to have surface water and groundwater connectivity and current groundwater use is stated as low. Groundwater resources are not licensed at present, but the plan allows for review of these arrangements if significant growth in extraction occurs. Groundwater monitoring does not currently occur in this catchment, but the plan operates on the premise that retaining key characteristics of the natural flow regime will adequately protect groundwater resources.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental water is protected by an allocation limit established at conservative levels. Restriction management, based on monthly flow triggers, preserves low flows in the system and protects environmental water at a higher level of surety than commercial extraction in dry periods. The environmental objectives permit links to be drawn between the outcomes, strategies and streamflow monitoring.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	Allocation records and streamflow data are ongoing and publicly available. Groundwater is not monitored in the catchment and compliance records are maintained. The plan commits to annual plan effectiveness reporting, although it is not required to be publicly available.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Climate risk is broadly described. Acknowledging climate change impacts, allocation limits under the plan are established conservatively. No new direct-take allocations will be granted and development is supported by additional storage-take allocations. As allocation limits are approached, the opportunity will arise to review them in light of climate change and more specific environmental factors.
11. Is stakeholder engagement in the planning process adequate?	Yes	Through formal and informal mechanisms, stakeholder consultation has been comprehensive – with some feedback being included the draft plan. A consultative group contributed to plan development and public submissions on the draft plan were formally provided. The response process was transparent.
12. Have identified outcomes been achieved during the reporting period?	Unable to assess	It is unclear whether plan objectives are being achieved. Some monitoring data is available on WIST, but it provides limited opportunity to evaluate plan objectives. The plan commits to annual reporting and this will not be considered until conclusion of the 2013–14 irrigation season. This information is not required to be publicly available.

DRAFT MACQUARIE RIVER CATCHMENT WATER MANAGEMENT PLAN



Context

The Macquarie River catchment forms part of the South Esk Basin in Tasmania's northern midlands. It is one of the driest catchments in the state and experiences considerable variability from year-to-year. The flow regime has a long history of modification back to the mid-1800s, with significant regulation occurring in the Macquarie and Elizabeth rivers during summer when water is released from storage. Despite this modified flow regime, it retains key elements of the natural flow regime and many of its natural freshwater-dependent features. Land use activity comprises small-scale irrigated cropping, dryland grazing, forest enterprises and tourism and recreational ventures. Surface water and groundwater systems are linked and current groundwater extraction is assessed as low. The catchment lies within the South Esk Hydro-electric District and encompasses four irrigation districts. The Midlands Irrigation Scheme is under construction and will deliver water to the catchment from Arthurs Lake. The plan's key aims are to simplify the water management regime, clearly articulate the regulatory environment for water users, determine the volume of water available and specify the rules for accessing the resource. Plan development aims to ensure the local water resources are managed sustainably, and that the catchment's freshwater environmental values and productive capacity are preserved into the future.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The draft plan was released in November 2012 and is yet to be finalised. It covers surface and groundwater management within the catchment. Once finalised, the plan will be reviewed in its 10th year after adoption.
2. Does the plan include key assessments?	Yes	Key hydrological, groundwater, catchment health, water quality, environmental flow and socio-economic assessments were done to inform plan development, and risk is discussed throughout these reports. Plan provisions protect key features of the natural flow regime that may be subject to risk from water extraction.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	Hydro Tasmania has statutory rights to water in this catchment. The draft plan indicates the system is fully allocated and establishes an annual sustainable level of extraction. Minimum lake levels, allocation limits and access rules protect seasonal flow regimes. The plan rationalises water allocations and removes redundancy, resulting in parity of water allocations and extraction volumes.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The draft plan clearly identifies environmental, water use and development objectives, as well as reporting requirements and timeframes. Comprehensive assessment underpins the objectives and associated risk is discussed in assessment reports. Monitoring arrangements focus on streamflow and the plan discusses the relationship between streamflow and plan objectives.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade. Accordingly, the plan supports both temporary and permanent trade. DPIPWE assesses transfer applications and Hydro Tasmania's consent to transfer is required. Groundwater use is not licensed in the catchment and is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	Yes	The draft plan identifies plantation forestry and farm dams as the relevant intercepting activities. The effect of future forestry development on catchment yields is projected as low.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Supported by hydrological assessments, the draft plan acknowledges connectivity between surface water and groundwater in the catchment. Current groundwater use in the catchment is evaluated as low, although the potential for increased extraction is identified. The draft plan establishes a groundwater monitoring regime and makes allowance for implementation of groundwater licensing and metering if extraction exceeds acceptable limits.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Based on a range of supporting scientific studies, environmental water in the catchment is protected through allocation limits and access rules to preserve characteristic flow events and natural variability. The draft plan recognises historical flow regulation and preserves long-standing managed minimum flows critical to river health.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	Allocation records, streamflow and groundwater data are ongoing and publicly available. Records are maintained for compliance measures including meter installation, surface water extraction, trades and restriction management. The plan commits to annual plan effectiveness reporting, although there is no requirement for its public availability.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The impacts of climate change and variability are considered in the draft plan based on the CSIRO Tas SY results. The plan identifies the catchment as being fully allocated and risks to water reliability during the summer-take period are stated.
11. Is stakeholder engagement in the planning process adequate?	Yes	Through formal and informal mechanisms, stakeholder consultation has been thorough – with some feedback being included the draft plan. A consultative group contributed to plan development and public submissions on the draft plan were formally provided. The response process was transparent.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The draft status of the plan does not allow for progress to be assessed.

DRAFT RINGAROOMA RIVER CATCHMENT WATER MANAGEMENT PLAN



Context

The Ringarooma River catchment is situated in north-east Tasmania. The river is an unregulated system exhibiting strong seasonal flows, the greater of which occur from May to November. Surface water and groundwater resources are highly connected in the catchment – about half of all surface water flow originates from groundwater discharge, particularly in summer. Current groundwater extraction is assessed as low. There are several on-stream and off-stream dams in the catchment's upper reaches but the flow regime remains in a relatively natural condition, supporting a healthy aquatic ecosystem. The catchment has some significant wetlands including the Ramsar-listed Floodplain Lower Ringarooma River. The main land use activities across the catchment are grazing, cropping and plantation forestry. The Winnaleah Irrigation Scheme delivers water to the district from the Cascade and Frome dams. The plan aims to ensure the catchment's freshwater environmental values and productive capacity is preserved into the future.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	The draft plan was released in October 2012 for public consultation and is being finalised. It covers surface water and groundwater in the catchment, including the Floodplain Lower Ringarooma River Ramsar-listed wetland, and will be reviewed in its 10th year after adoption.
2. Does the plan include key assessments?	Yes	Key hydrological, groundwater, catchment health, water quality, and environmental flow assessments were undertaken to inform plan development. Evidence of socio-economic assessment is less clear, but community consultation and engagement – including water user surveys – is extensive and ongoing and has influenced draft plan content.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	The draft plan does not identify any areas of overuse. The plan establishes allocation limits in the catchment for the summer period which recognise the historical level of water extraction (up to 2004) and provides for the water needs of the environment.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The draft plan identifies environmental, water use and development objectives, as well as reporting requirements and timeframes. Comprehensive assessment underpins environmental objectives and associated risk is discussed in assessment reports. Monitoring arrangements focus on streamflow and the plan discusses the relationship between streamflow and plan objectives.
5. Does the plan facilitate trade?	Yes	The WMA 1999 provides for water trade. Accordingly, the draft plan facilitates both temporary and permanent trade and DPIPWE will assess transfer applications. Groundwater use is not licensed in the catchment and is therefore not tradeable.
6. Is interception appropriately considered and integrated into the plan?	Yes	The draft plan identifies plantation forestry and farm dams as the relevant intercepting activities. Evidence-based consideration of forestry interception has been rigorous and the effect of future forestry development on catchment yields is projected as low.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	Supported by hydrological assessments, the draft plan acknowledges the high connectivity of surface water and groundwater within the catchment and the risk posed by increased groundwater extraction in low-flow periods. A groundwater monitoring regime is established and the plan makes allowance for the implementation of groundwater licensing and metering if extraction exceeds acceptable limits.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The draft plan clearly identifies environmental objectives, which are linked to the plan provisions of allocation limits and restriction management. Restriction management, including cease-to-take provisions, provide for the protection of key characteristics of the natural flow regime to support environmental outcomes.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	Allocation records, streamflow and groundwater data are ongoing and publicly available. Additional river health monitoring will be undertaken during the five-year transition period to assess risk and inform final summer-take allocations. Records are maintained for compliance measures including meter installation, surface water extraction, trades and restriction management. The plan commits to annual plan effectiveness reporting, although there is no requirement for its public availability.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	The impacts of climate change and variability are considered in the draft plan based on the CSIRO Tas SY results. In acknowledgment of the predicted impacts, a trigger for review and amendment of winter-take allocation limits is established and possible future yield reductions are stated.
11. Is stakeholder engagement in the planning process adequate?	Yes	Through formal and informal mechanisms, stakeholder consultation has been extensive over a number of years – with feedback being included the draft plan. Stakeholder submissions were formally provided and the response process was transparent. Stakeholder engagement is ongoing through the five-year transition period for summer-take licence determination.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	The draft status of the plan does not allow for progress to be assessed.

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9 Australian Capital Territory

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The context of water planning in the Australian Capital Territory

Australian Capital Territory water sources provide urban and rural water supply to Australia's largest inland city and are a major recreation resource. These water resources, particularly surface water, are largely shared with New South Wales. The combination of extended dry periods and occasional flooding leads to large flow variability in the region's waterways. Many ACT water resources, particularly urban lakes and streams, are highly modified because of changes in land use, streamflow diversions, wastewater and stormwater discharges, as well as introductions of exotic biota. Several variables are exerting pressure on water security into the future, including population growth, bushfires and long-term climate change – all of which must be managed within the context of water sharing in the Murray–Darling Basin (MDB).

Planning arrangements

Key legislation and policies

Think water, act water 2004 (TAW) is the policy document that aims to secure a long-term water supply for the ACT. TAW provides a framework for cooperation between community, industry and government to manage, use and conserve the ACT's water resources. It includes a range of measures that aim to ensure water supply security for the ACT, protect and improve ecological values associated with waterways, and improve the amenity of urban areas. TAW also has an associated implementation plan to guide actions for the achievement of objectives.

The *Water Resources Act 2007* (WRA 2007) is the legal basis for allocating water, issuing licences to take water and providing environmental flows. The objects of the WRA 2007 provide for the sustainable management of the ACT's water resources, and subsequent sections broadly cover environmental flows, water access entitlements, licensing of water use and bore drillers, construction of waterway works (e.g. farm dams), compliance and enforcement. The water sharing plan is in subordinate legislation and comprises two disallowable instruments: DI 193 describes water management areas and DI 191 details the volume of surface water and groundwater that can be taken from each water management area.

The Environmental Flow Guidelines 2013 are a statutory instrument under the WRA 2007 to determine the water necessary to maintain the health of aquatic ecosystems in the ACT. The guidelines apply to all ACT water resources, including water in rivers, streams, dams, lakes and groundwater. Monitoring of the effectiveness of environmental flows has been ongoing since the development of the original guidelines in 1999, resulting in their review and replacement by the 2006 and then the 2013 guidelines.

The Environment and Sustainable Development Directorate is responsible for strategic water policy, regulation of the ACT's water resources, water efficiency programs, and monitoring and reporting on water quality (e.g. TAW progress reports, annual ACT Water Report).

Proposed changes to water resource management legislation and policy

Following a review of TAW, a new draft ACT water strategy was released for comment in July 2013. The strategy is intended as a 30-year plan with reviews undertaken every five years. It takes account of changed circumstances in the ACT since 2004, including extension of the Cotter Dam, completion of the Murrumbidgee to Googong pipeline, the increased capacity to use water markets to purchase water if required, successful measures to reduce per capita demand and requirements under the Murray–Darling Basin Plan. The strategy includes the development of a governance and regulatory framework and a series of implementation plans.

Murray–Darling Basin Plan

The Murray–Darling Basin Plan was adopted in November 2012 and is relevant to management of water resources in the ACT. While many of the provisions of the Basin plan do not take effect for several years, the ACT Water Resources Plan (WRP) is due in 2015. ACT instruments for Basin plan implementation are the WRA 2007 and the updated Environmental Flow Guidelines 2013. The ACT is also undertaking an Indigenous engagement strategy for the new WRP.

When it commences later this year, the *Australian Capital Territory Water Management Legislation Amendment Act 2013* (Cth) will ensure that the ACT Government has power to manage the abstraction of water on national land and by Commonwealth entities in the ACT, and the surface waters of the Googong Dam. While located in NSW, the Googong Dam is part of the ACT water supply, and the Basin plan provides for the water resources of the Googong Dam area to form part of the ACT water resource plan area.

Table 7: Summary of planning instruments in the ACT

Assessment criteria	Water Resources Act 2007	TWAW 2004	DIs 191 & 193	EFlow 2013	Comment
1. Status of plan	yes	yes	yes	yes	The ACT water planning framework comprises several instruments. TWAW is the overarching water policy strategy (released in 2004). The legal basis for water management is the <i>Water Resources Act 2007</i> that establishes two DIs which technically form the water sharing plan. The DIs describe management areas and the volumes of water that can be taken from them. Statutory Environmental Flow Guidelines were established in 1999 and updated in 2006 and 2013.
2. Key assessments		yes	yes	yes	The ACT's water resources are listed in the 2007 DIs, with further details provided in TWAW 2004 vol. 3. Climate and population variables are assessed in the <i>Future water options</i> report. Environmental assets and their condition are assessed in the Environmental Flow Guidelines and associated reviews.
3. Overuse status and pathways to sustainable water extraction	yes	yes	yes	yes	The WRA 2007 and TWAW set objectives for sustainable water extraction. The 2007 DIs detail allocations for consumptive use, environmental flows and future water reserves. The Environmental Flow Guidelines detail the water requirements for environmental assets.
4. Clearly identified and measurable outcomes	yes	yes		yes	The WRA 2007, TWAW and Environmental Flow Guidelines identify objectives for sustainable use and environmental protection. A monitoring and reporting program is detailed in TWAW.
5. Facilitation of trade	yes				The WRA 2007 enables water entitlement dealings and the ACT is generally compliant with trade service standards.
6. Integration of water intercepting activities	yes				The WRA 2007 limits interception from rainwater tanks and farm dams. The potential interception impacts of forestry are regularly assessed but there are no commercial plantations in the ACT at present.
7. Surface water/ groundwater connectivity	yes	yes	yes	yes	The WRA 2007, DIs and TWAW provide for integrated management of surface water and groundwater. Environmental Flow Guidelines also acknowledge the importance of connectivity.
8. Environmental water management arrangements	yes	yes	yes	yes	The WRA 2007 requires preparation of Environmental Flow Guidelines. The DIs detail volumes for environmental water allocations in each water management area. A regular monitoring and reporting program is detailed in TWAW and the Environmental Flow Guidelines.
9. Monitoring, compliance and enforcement provisions	yes	yes		yes	The WRA 2007 identifies offences, disciplinary action and metering requirements associated with compliance. TWAW requires monitoring, review and adaptive management for plan provisions. Under the Act, the Environmental Flow Guidelines must also be regularly reviewed and updated.

Assessment criteria	Water Resources Act 2007	TWAW 2004	DIs 191 & 193	EFlow 2013	Comment
10. Planning for climate change and extremes in inflows or recharge		yes		yes	TWAW acknowledges climate change as an important component of water planning and the <i>Future water options</i> report regularly assesses assumptions in water planning variables. The Environmental Flow Guidelines identify the need to use different flow guidelines under drought conditions.
11. Stakeholder engagement	yes	yes		yes	The WRA 2007 sets minimum consultation requirements when drafting Environmental Flow Guidelines. TWAW incorporates community consultation on plan development and review.
12. Have outcomes been achieved	yes	yes		yes	TWAW progress reports provide information on the planned actions that have been implemented. Under the WRA 2007, the Environmental Flow Guidelines are required to be regularly assessed against objectives and reports made available to the public.

Key findings

This section provides updated commentary on the previous report card assessment for the Australian Capital Territory (key findings summarised below) and includes information on significant findings for 2013.

Previous findings

- *Environmental flow guidelines underpinned by science*
- *Regular monitoring and reporting to assess outcome achievement*

2013 findings

Environmental flow guidelines underpinned by science

The ACT has statutory and adaptively managed environmental watering arrangements that integrate the management of surface water and groundwater for the maintenance of aquatic ecosystems. Many of the ACT's waterways are affected by urban development and, to address this, Environmental Flow Guidelines were introduced in 1999. The guidelines aim to protect the health of water resources based on the best-available scientific information. An assessment program, underpinned by empirical research, regularly evaluates environmental watering arrangements to inform future environmental flow releases. The guidelines were updated in 2006 and, following a thorough review in 2011, new guidelines were adopted in April 2013.

Regular monitoring and reporting to assess achievements

Regular monitoring and reporting indicate the ACT has made progress towards water management goals set by *Think water, act water* in 2004. Consistent monitoring and transparent reporting allows better assessments of the effectiveness of water planning. The ACT Water Report is an annual monitoring summary that provides information ranging from water trading statistics to water quality measurements and ecosystem condition assessments. A review of *Think water, act water* in 2012 concluded the strategy was largely successful in meeting the ACT's water needs throughout a period of severe drought. Several changes were required to ensure the ACT has secure access to clean and reasonably priced water into the future.

Integration of responsibility across agencies

Arrangements for the management of water in the ACT involve multiple agencies and cross-jurisdictional issues. A lack of coordination across agencies and the corresponding absence of a whole-of-catchment management approach has resulted in numerous water quality problems in Canberra's urban waterways. The ACT has recognised this issue and is actively working to improve integration across jurisdictions and agencies.

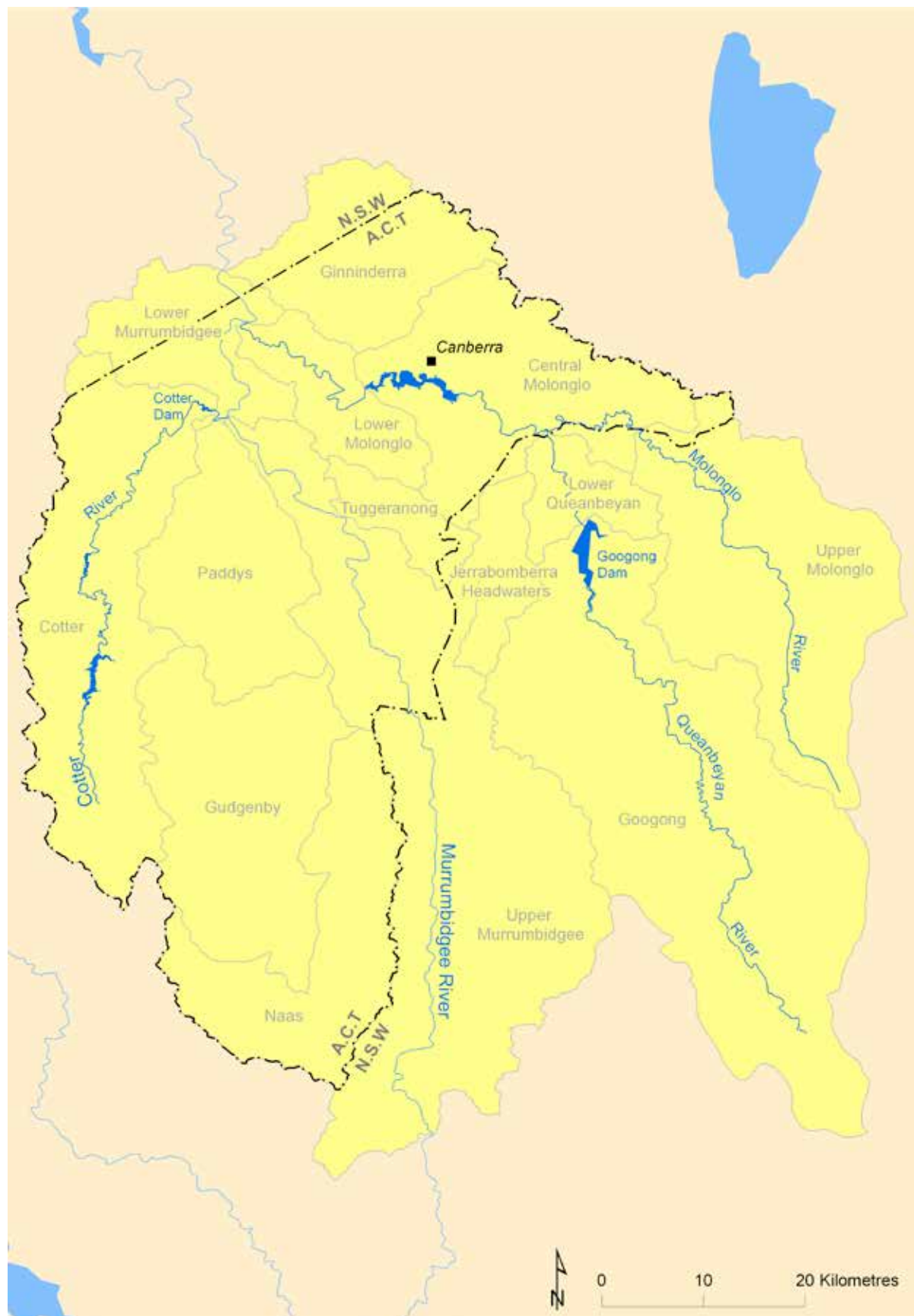
In particular, the 2012 *Planning strategy (Territory plan)* re-emphasises goals to integrate water management with environmental management and to improve water quality, the 2013 *Draft ACT water strategy* highlights integration as a goal through a proposed governance plan to address water management across agencies and the *Lake Burley Griffin action plan* aims to integrate responsibilities between the ACT Government, National Capital Authority, Queanbeyan City Council, Palerang Council, and ACTEW Water for the management of water quality in Lake Burley Griffin.

Glossary and abbreviations

Term	Acronym	Definition
Disallowable instrument	DI	Legislation which is subordinate to the <i>Water Resources Act 2007</i> and describes water management areas in the ACT, as well as the volumes of water available for consumptive uses, environmental flows and future reserves.
Environmental Flow Guidelines	EFlow	A statutory instrument under the <i>Water Resources Act 2007</i> to determine the water necessary to maintain the health of aquatic ecosystems.
<i>Think water, act water</i>	TWAW	Overarching policy framework which provides for the management of water resources in the ACT.
<i>Water Resources Act 2007</i>	WRA	Legislation for allocating water, issuing licences to take water, and providing environmental flows in the Australian Capital Territory.

Planning areas

Australian Capital Territory



Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	Implementation of TWAW is continuing. It covers all surface water and groundwater resources in the ACT. The <i>Water Resources Act 2007</i> is the legal basis for controlling all water use. The 2013 <i>Draft ACT water strategy</i> describes new water policy based on changing circumstances such as the Basin plan. New Environmental Flow Guidelines were released in 2013.
2. Does the plan include key assessments?	Yes	Detailed resource information has been compiled and integrated into the water planning process. Water planning variables are regularly reviewed through annual Water Reports with the most recent available review for 2011–12. The Basin plan is the key driver for ACT Government water planning assessments, changes and improvements.
3. Does the plan address overuse and is there a pathway to sustainable extraction?	Yes	There were no areas of overuse identified in the ACT. Extraction limits have been set for all water sources. The extraction limits reflect environmental and consumptive use trade-offs. The ACT uses eight per cent of its treated effluent internally and returns the other 92 per cent to the Basin. In conjunction with drought and climate change, risks to water supply associated with a growing population have been addressed through capital projects such as the Cotter Dam expansion and reduced per capita demand.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan clearly identifies objectives with associated actions for their achievement detailed in the supporting implementation program. The assessment of results is facilitated by regular monitoring, reporting and review procedures. With nine agencies having water-planning-related responsibilities, the 2013 <i>Draft ACT water strategy</i> highlighted governance issues that might affect objectives and actions. A proposed governance plan to address interagency obligations was due for release in December 2013.
5. Does the plan facilitate trade?	Yes	Trade is facilitated in the ACT under the WRA 2007 but there is little demand. While interstate trade is enabled by legislation, it is difficult due to a lack of appropriate agreements between jurisdictions. Since the 2011 assessment, the ACT has reported that the ability to trade has improved, alongside an increased capacity to purchase water. Negotiations with NSW have progressed, although it is not yet evident if these changes have enabled inter-jurisdictional water trading to occur.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan identifies interception activities, such as unlicensed basic landholders' rights, and considers the impact of forest regrowth on water supplies after bushfire. The installation of farm dams is regulated.
7. Does the plan include/ address surface water and groundwater connectivity as appropriate?	Yes	There is relatively low usage of groundwater. Integrated management of connected groundwater and surface water occurs in the ACT. Stated goals in the 2013 <i>Draft ACT water strategy</i> include aspirations to better integrate groundwater and surface water planning.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The revised 2013 Environmental Flow Guidelines provide clear links between management objectives, required flow volumes and monitoring arrangements.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Yes	The Environment and Sustainable Development Directorate coordinates annual reporting on the state of the ACT's water resources. Nine agencies are responsible for water resource monitoring in the ACT, with uncertain governance an area of potential weakness to effective monitoring and reporting for adaptive management.
10. Does the plan deal appropriately with climate change and extremes in inflows or recharge?	Yes	Climate change and variability are dealt with in the plan through detailed analysis of future water options. This acknowledges the risks of reduced water supply due to climate variability and population growth. The water volumes allocated for extraction through disallowable instruments can be amended to deal with changes to water availability within the life of the plan.

Report card criteria	Assessment	Commentary
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement has occurred during all key stages of plan development (e.g. pre-plan consultation, public submissions on draft, feedback on trade-off decisions). Provisions of the Environmental Flow Guidelines also facilitate ongoing stakeholder input and engagement occurs on other issues on an <i>ad hoc</i> basis (e.g. enlargement of Cotter Dam). Stakeholder engagement was undertaken as part of the review of TWAW. In preparing for Basin plan implementation, a strategy for Indigenous engagement is being prepared.
12. Have identified outcomes been achieved during the reporting period?	Yes	Regular monitoring and reporting against plan objectives indicates progress towards water use efficiency and future water security goals. The achievement of ecological and water quality targets has proved challenging – largely due to the impacts of drought and fires.

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10 Northern Territory

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The context of water planning in the Northern Territory

Water planning in the Northern Territory aims to allocate water between beneficial uses, which include the environment, cultural needs and consumptive uses. The NT experiences a wide range of climatic conditions ranging from those of the arid centre to the pronounced wet and dry seasons of the north. In the northern one-third of the NT, water is extracted for consumptive uses from a mixture of both surface and groundwater resources, with reliance on groundwater during the dry season. In the southern two-thirds of the NT, surface water flows are highly sporadic and there is no significant surface water extraction. As a result, groundwater resources provide for consumptive uses. There are no regulated water supply systems in the NT within any of the plan areas. The NT's water resources are generally considered to be under relatively little pressure due to a comparatively small population base and low intensity of land use. However, groundwater and surface water resources in several local areas are recognised as being under pressure from development and there is increasing interest from both the NT and Australian governments to support mining, petroleum and agricultural developments in the north.

Planning arrangements

Key legislation and policies

The NT's *Water Act 1992* (WA 1992) provides the legislative framework for water planning and entitlements for the NT's water resources. The WA 1992 provides for the investigation, allocation, use, control, protection, management and administration of water resources. It also defines the beneficial use categories of surface water and groundwater, which include the environment, cultural use, stock and domestic, public water supply, aquaculture, agriculture and industry (including mining and petroleum activities). The Department of Land Resource Management (DLRM) has primary responsibility for water planning.

Water extraction for most purposes must be licensed under the WA 1992. Licences are not perpetual and commonly have a term of 10 years. The WA 1992 also provides rights to take water from waterways and groundwater for stock and domestic uses without a licence. The licensing provisions of the WA 1992 do not apply to the take of water for mining and petroleum activities. Water for these purposes is authorised under the Mining Act, the Mining Management Act or the Petroleum Act. A memorandum of understanding between the DLRM and the Department of Resources provides some measure of integrated management of water for mining and petroleum operations and for other purposes, although this has no legislative base. The WA 1992 regulates the discharge of wastewater from mining and petroleum operations where the wastewater is not confined to the mining or petroleum site.

Subject to alternative arrangements that may be specified in water allocation plans, the NT has implemented its Water Allocation Planning Framework (WAPF). The framework establishes contingent allocations for environmental and other public benefit uses as the first priority where detailed environment and cultural water requirements have not been established. Allocations for consumptive use are made subsequently from the remaining available water. Under the framework at least 80 per cent of surface water flow or annual groundwater recharge is allocated for environmental and other public benefits. In the arid zone, where surface water flows and recharge are sporadic, at least 95 per cent of surface water flow is reserved for environmental and other public benefits, and total groundwater extraction over a period of 100 years is not to exceed 80 per cent of the total aquifer storage at the start of extraction. Licence applications that, if granted, would exceed these thresholds need to be supported by scientific research into public benefit water requirements.

Water control districts and water allocation plans

The WA 1992 provides for the declaration of water control districts within the NT, where increased management of water is required, and for water allocation plans (WAPs) to be developed within a water control district. Plans are developed at the Minister's discretion for single or multiple water resources (surface water and/or groundwater), but the WA 1992 does not stipulate the process by which plans are developed.

WAPs establish how water will be shared between environmental and other public benefit needs and consumptive use. They describe the area and water resource to which a plan applies as well as the objectives, strategies and performance indicators of the plan. WAPs also detail the rules and operating mechanisms that ensure that water is shared among the beneficial uses in the plan area, and outline monitoring programs to evaluate the performance of the plan and to inform a review. A WAP has a maximum life of 10 years and must be reviewed within five years.

The WA 1992 provides for water advisory committees to be convened at the Minister's discretion to support the development and oversight of WAPs to maximise their social and economic benefits within ecological restraints. The composition of the committee is at the Minister's discretion, although committees typically consist of representatives from relevant government, industry, environmental, Indigenous and community interests.

Proposed changes to water resource management legislation and policy

In October 2013 the Minister for Land Resource Management announced a proposed approach to the management of the NT's water resources, including a review of the WA 1992 and the development of an overarching water policy for the NT. According to the Ministerial statement, the review of the WA 1992 will *'include systems for water trading and water markets, reconsider some of the current exemptions to the Act to provide transparency'* and *'enable the issuing of water licences in perpetuity'*.

Further to this, the proposed overarching water policy aims to:

- define principles for governing water use for economic purposes, as well as water quality for the environment and public water supplies
- cover the identification, assessment, development and allocation of all water resources
- clearly define water access rights
- promote sustainable water resource use and development and consider surface and groundwater connectivity
- set time horizons for planning and outline stakeholder participation rights.

In his statement, the Minister also announced specific policy decisions to allow the finalisation of existing draft WAPs. These include:

- removal of the agreed cap on water use for public water supply in the Alice Springs WAP
- removal of the proposed Strategic Indigenous Reserves in the draft Ooloo and Mataranka WAPs
- reconsideration of the data used to model water availability in the Mataranka draft WAP and other draft plans (in the Mataranka plan area, this would result in an increase to the average amount of water available for allocation from 19.5 GL to 36 GL per year).

For the 2013 Report Card, the Commission has not assessed the draft first-generation Mataranka and Ooloo WAPs in light of the significant changes that may occur in response to the Ministerial statement. The draft Great Artesian Basin WAP was assessed because there are no proposed changes on the public record. The arrangements currently in place for Alice Springs have also been assessed – this includes the draft second-generation WAP.

Key findings

This section provides updated commentary on the previous report card assessment for NT (key findings summarised below) and includes information on significant findings for 2013.

Previous findings

- *Water planning developing in a proactive manner*
- *The licensing of water rights outside of the WA 1992 impedes effective and sustainable management of the resource and may impact on water security for other licensed users or the environment*
- *Lack of monitoring, reporting and further research*

2013 findings

Water planning is still developing

Water planning continues to progress in the NT but the need is growing for a more transparent, risk-based approach to planning prioritisation, as well as a clear, overarching process for plan development. In addition to four draft plans, the NT still has several water plans under development, including those for two localised areas of high demand in the Darwin Rural water control district. If all of these WAPs are completed and declared in a timely manner, there is an opportunity to plan for increasing pressure for water from population growth as well as mining and horticulture activities.

Lack of monitoring, evaluation and reporting against plan outcomes

Arrangements for monitoring, reporting and the need to address existing knowledge gaps are well described in water plans, including commitments to produce annual monitoring reports. Monitoring reports have been publicly released as part of the five-year reviews of the Ti Tree and Alice Springs plans. In addition, annual reports have been released for the Katherine plan, which include annual allocation announcements and some monitoring data. An internal evaluation report has been completed for the review of the Alice Springs plan, which includes an assessment of progress in achieving the plan's strategies. There remains a need for an effective framework for monitoring and public reporting against plan outcomes to inform plan evaluation and ongoing adaptive management.

Greater transparency is required around water management arrangements for mining and petroleum activities

The WA 1992 exempts mining and petroleum from the requirement for a water extraction licence to take or use surface water and groundwater. There is an administrative arrangement between the relevant government agencies that provides some scope for integrated management. Under the agreement, mining and petroleum interests are to be consulted on water allocation plans and licences issued under the WA 1992 are not to impact on allocations for mining and petroleum and vice versa. While allocations for mining and petroleum take may be considered and accounted for under the NT water allocation planning process, the arrangements for doing this and regulating mining take to safeguard existing users and the environment is not transparent.

Findings against 12 criteria

1. Status of water planning	Water allocation plans are currently in place for four water planning areas. This includes Alice Springs, where a second-generation plan has been drafted. There are five other WAPs either in draft or currently being developed, including two in the Darwin Rural water control district. It is not clear what criteria have been applied in the prioritisation of planning in the NT. In the absence of scientific research on environmental and other public benefit water requirements, the WAPF provides for environmental and cultural flows and guides water allocation decisions. A rapid increase in water demand in the NT will necessitate a timely response to maintain appropriate water management arrangements.
2. Do plans include key assessments?	Hydrologic and environmental assessments have been completed for all plans and newer plans are supported by social and economic assessments. Summaries of these assessments are described within the plan and its associated documentation, which remain publicly available for the life of the plan. Plans acknowledge a need to develop an improved understanding of groundwater recharge rates and the needs of groundwater-dependent ecosystems (GDEs).
3. Do plans prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	None of the plans identify areas of overuse and all declared plans have sustainable extraction limits that have been developed by an informed trade-off process. The three declared arid zone plans manage the extraction of groundwater within the NT's WAPF, whereby no more than 80 per cent of total aquifer storage will be extracted within 100 years. Several areas where plans are under development are under pressure from high levels of unlicensed use and the management arrangements in these areas will have greater clarity once the plans are finalised.
4. Do plans include clearly identified and measurable outcomes?	Newer plans have clearly identified outcomes and more explicit links between objectives, performance indicators and monitoring arrangements – but not all are measureable. The original Ti Tree plan did not contain outcomes but they were included following the five-yearly plan review.
5. Do plans facilitate trade?	Licences issued in accordance with a declared WAP are tradeable, but are subject to specific trading rules in the plan. There has been little demand for trade to date.
6. Is interception appropriately considered and integrated into plans?	Unlicensed stock and domestic extraction is accounted for in the setting of extraction limits within plan areas. Planning is underway for two areas within the Darwin Rural water control district where there is significant unlicensed extraction. Timely declaration of these plans is needed to manage potential extraction impacts. The WA 1992 exempts mining and petroleum from the requirement for a water extraction licence. An administrative arrangement between the relevant government agencies provides some scope for integrated management. Allocations for mining and petroleum may be considered and accounted for in WAPs, however the process for doing this is not transparent.
7. Do plans address GW/ SW connectivity?	Plans acknowledge connectivity and most plans have conjunctive management arrangements. Although, the Katherine plan manages the Tindall Aquifer so that discharges into the Katherine River are maintained during the dry period, it does not manage surface water extractions from the river – limiting the extent of conjunctive management arrangements in this area. DLRM has advised that annual announced allocation procedures for surface water extractions will be introduced in the updated Katherine, Ooloo and Mataranka plans.
8. Do plans contain accountable environmental watering arrangements?	Plans contain environmental water management arrangements. In most cases there is little scientific evidence available to provide a basis for these arrangements, nevertheless the plans have adopted a precautionary approach to the setting of extraction limits in line with the WAPF and also outline relevant monitoring activities.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Compliance and enforcement provisions are contained in the WA 1992. The Act also requires WAPs to be reviewed at least every five years. Technical assessments undertaken to inform the first five-yearly review of the Ti Tree WAP and the Alice Springs water resource strategy have been publicly released. Annual reports for the Katherine plan include some monitoring data. Implementation targets included in WAPs have flagged an intention for more regular monitoring and reporting, but these schedules have not been adhered to.
10. Do plans deal appropriately with climate change and/or variability?	The impact of future climate change on recharge and streamflow is considered insignificant in the arid zone and therefore these plans have been developed based on historical data. Climate variability is accounted for to the extent that it is represented in this historical data. Climate variability is not a key consideration where short-term fluctuations in rainfall do not have a significant impact on recharge to, or water availability from, deep aquifers. While the preparation of the Katherine plan specifically excluded consideration of climate change, the plan states that any relevant climate change developments will be incorporated into the five-yearly review. Variability is managed well in this plan.

<p>11. Is stakeholder engagement in the planning process adequate?</p>	<p>While the WA 1992 provides for the formation of water advisory committees, there is no legal requirement for consultation in preparing plans. To date the development of draft WAPs (except for the Great Artesian Basin) has involved substantial input from community-based water advisory committees. These committees have included Indigenous and other relevant stakeholders. Following the release of draft plans, further community input has been sought through community meetings and submissions processes. The NT has advised that the revised draft Alice Springs, Ooloo and Mataranka plans will be re-released for public comment.</p>
<p>12. To what extent have identified outcomes been achieved during the reporting period?</p>	<p>It has not been possible to assess the extent to which plan outcomes have been achieved given that limited reporting against outcomes has occurred to date. The Alice Springs plan is the only one to have been evaluated, although the draft evaluation report has not been publicly released. The first five-year review of the Ti Tree WAP did not comment against plan outcomes given the absence of objectives in the plan before the review and the second review is not due until 2014. Annual reports released for the Katherine plan do not explicitly evaluate plan performance. The first five-year review of the Katherine plan is due in 2014.</p>

Table 8: Summary of planning instruments in the Northern Territory

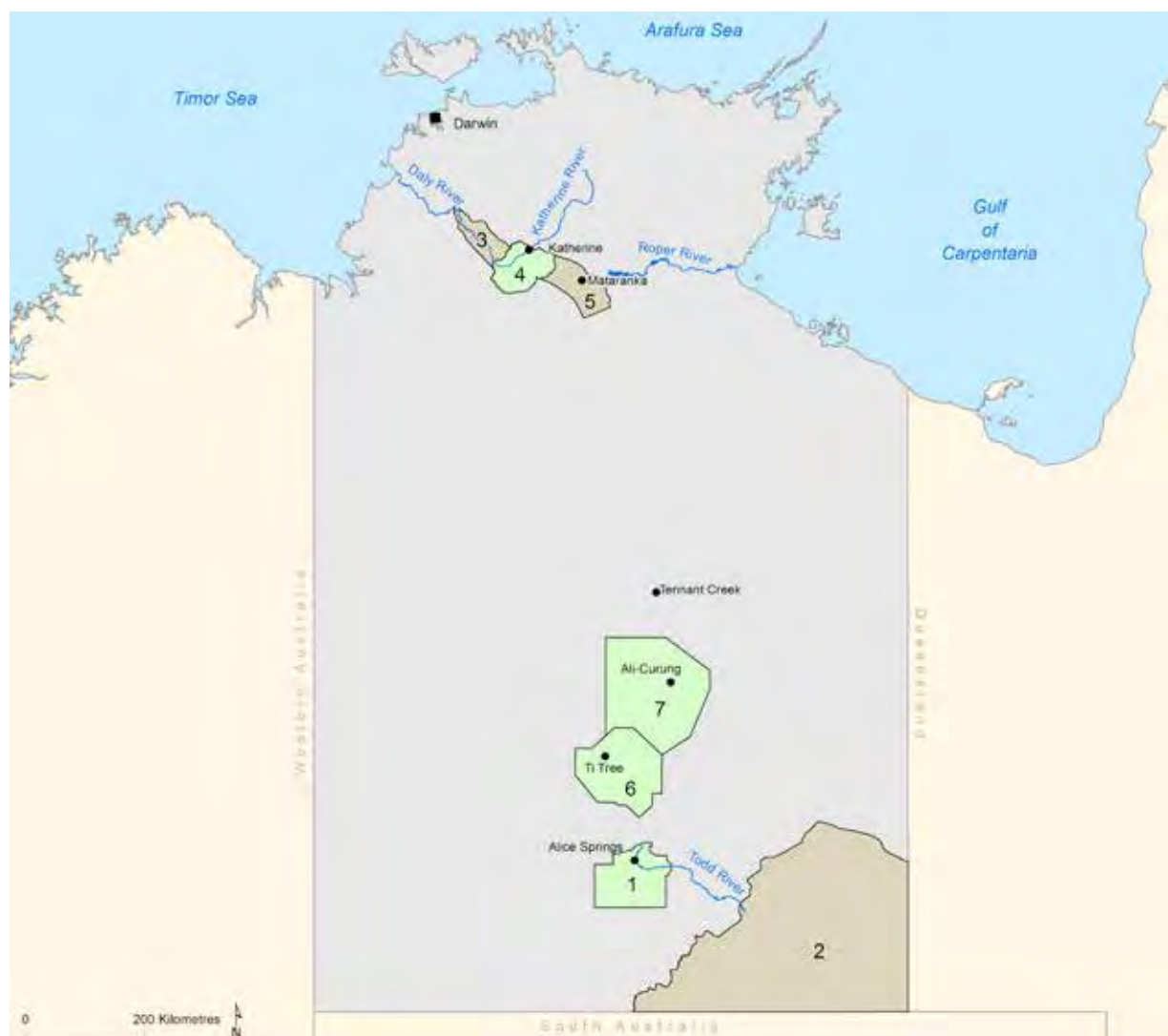
Assessment criteria	Territory		Catchment	Comment
	Water Act	Policy	WAP	
1. Status of plan	yes		yes	The WA 1992 provides the legislative basis for WAPs. WAPs establish the planning objectives and define the operational rules.
2. Key assessments	yes		yes	The WA 1992 provides broad guidance for water resource investigations to inform water planning. Assessments are undertaken at the plan area level and may include environmental and cultural water requirements.
3. Overuse status & pathways to sustainable water extraction	yes	yes	yes	Sustainable extraction limits and environmental objectives are specified in each WAP. In the absence of detailed scientific information on water requirements, the WAPF provides contingent allocation limits for the environment and other public benefits.
4. Clearly identified and measurable outcomes	yes		yes	The WA 1992 contains broad provisions that must be included in plans. WAPs specify the outcomes for the plan area.
5. Facilitation of trade	yes		yes	The WA 1992 requires that water licences can be traded. Trading rules are detailed in WAPs.
6. Integration of water intercepting activities	yes	yes	yes	WAPs determine to what extent intercepting activities are managed in each area. Water for mining is not managed through WAPs. An MOU between the relevant NT agencies provides some level of integration of interception through mining and petroleum activities.
7. Surface water/ groundwater connectivity			yes	WAPs define the water resources to be managed by the plan and may discuss the connectivity of these resources where appropriate.
8. Environmental water management arrangements	yes	yes	yes	The WA 1992 requires WAPs to allocate water to the environment. WAPs detail the arrangements in place to provide for environmental water. Where a WAP is not in place, the WAPF provides for environmental water arrangements.
9. Monitoring, compliance and enforcement provisions	yes		yes	The WA 1992 covers compliance and enforcement provisions. It also requires WAPs to be reviewed at least every five years. Monitoring arrangements are detailed in WAPs.
10. Planning for climate change and extremes in inflows or recharge			yes	WAPs may contain management arrangements to deal with climate change and variability. Short-term climate variability does not impact on the availability of water in deep aquifers in the arid zone.
11. Stakeholder engagement	yes		yes	The WA 1992 does not require stakeholder consultation but allows for the establishment of water advisory committees to support WAP development and oversight.
12. Extent to which outcomes have been achieved	yes		yes	The WA 1992 specifies that plans are to be reviewed every five years. Monitoring, reporting and evaluation arrangements are detailed in WAPs.

Glossary and abbreviations

Term	Acronym	Definition
Arid zone		Area of NT located in the lower two-thirds of the territory where surface water flows are highly sporadic and most water extractions are from groundwater.
Department of Land Resource Management	DLRM	NT department with primary responsibility for water planning (formerly the Department of Natural Resources, Environment, the Arts and Sport).
Groundwater-dependent ecosystem	GDE	Ecosystems dependent on groundwater for their existence and health.
Memorandum of understanding	MoU	Administrative agreement between relevant NT government agencies in respect to water rights for mining, petroleum and non-mining purposes.
Water advisory committee	WAC	Statutory bodies formed under the WA 1992. Members are drawn from the community and are selected for their particular expertise to develop and oversee a water management plan.
Water allocation plan	WAP	The instrument that defines the water sharing allocations and plan for an area where water extraction needs to be closely managed.
Water Allocation Planning Framework	WAPF	Framework used by the NT to provide contingent allocations for environmental and other public benefit provisions and for consumptive use.
Water control district	WCD	An area declared under the WA 1992 where water extraction is in greater demand and is more intensively managed than other areas of the NT.
Water resource strategy	WRS	The instrument that defines the water sharing allocations and plans in the Alice Springs area. More recent water plans are called water allocation plans (WAPs).

Planning areas

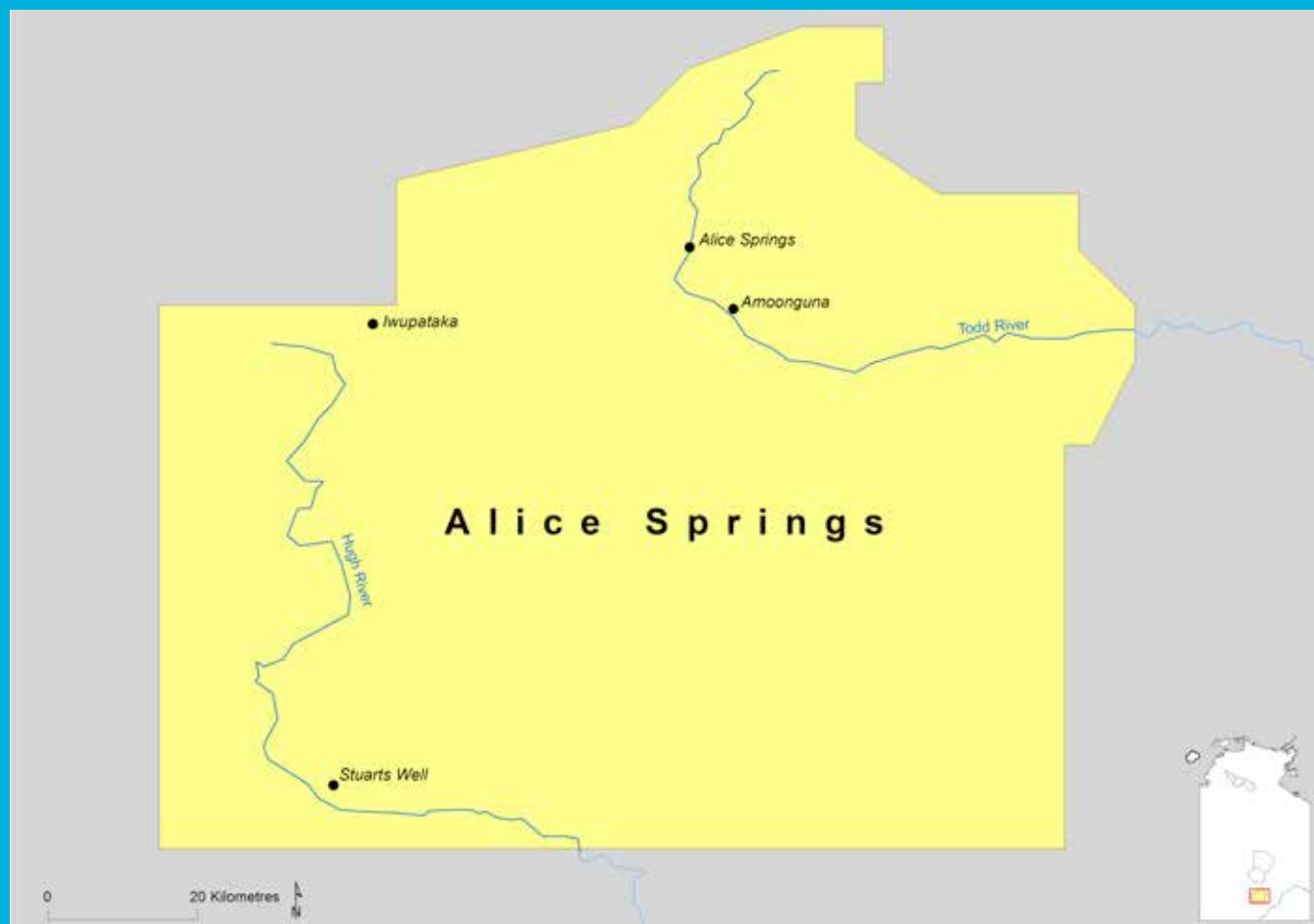
Northern Territory



1. Alice Springs Draft Water Allocation Plan	518
2. Great Artesian Basin (NT) Draft Water Allocation Plan	520
3. Ooloo Aquifer Draft Water Allocation Plan	NA
4. Tindall Limestone Aquifer (Katherine) Water Allocation Plan	522
5. Tindall Limestone Aquifer (Mataranka) Draft Water Allocation Plan	NA
6. Ti Tree Region Water Allocation Plan	524
7. Western Davenport Water Control District Water Allocation Plan	526

NA = not assessed. These draft plans were not assessed as there are significant changes likely to be introduced prior to their finalisation.

ALICE SPRINGS WATER ALLOCATION PLAN 2013–2018



Context

The draft Alice Springs WAP is the result of the five-yearly review of the Alice Springs water resource strategy and covers a portion of the Alice Springs water control district represented on the map above. This assessment is based on the draft plan unless specific reference is made to the water resource strategy.

The draft Alice Springs plan includes the township and surrounds of Alice Springs, a regional centre in the arid zone of central Australia. The plan covers the Todd River catchment as well as the alluvial and sedimentary aquifers in the immediate vicinity of the Alice Springs township. Almost all of the water supplies in the plan area are drawn from groundwater, with the exception of some surface water retention in small dams for stock use.

Alice Springs is a high-priority area because the urban centre is entirely dependent on groundwater resources. In addition to supporting the area's unique environment and areas of cultural significance, the water resources of the Alice Springs region support major economic activities including residential development, tertiary industries (including tourism and regional support functions), defence, pastoral production and horticulture.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A plan has been in place since 2006. The water resource plan was reviewed in 2011 and a draft replacement plan released for public comment in March 2013.
2. Does the plan include key assessments?	Yes	Key assessments were conducted to inform the replacement plan. The environmental assessment is based on limited information, although the replacement plan contains implementation targets that commit to defining and monitoring environmental water requirements.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	Extraction limits are set for all water resources managed under the draft plan. A clear trade-off process informed development of the Roe Creek cap, which allows for the resource to be mined – through gradual drawdown – to provide drinking water for Alice Springs. However a recent Ministerial statement suggests the cap is to be removed and the resource managed through water efficiency measures.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The draft plan includes clear outcomes and links monitoring to performance indicators, but not all performance indicators are measurable.
5. Does the plan facilitate trade?	To some extent	The plan allows trading, although licences are not fully NWI-consistent and barriers to trade are not explained by the plan. There is a low level of demand for trading in the area.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Stock and domestic use is considered and managed by the draft plan. Mining exploration occurs within the water control district. It is unclear whether this form of interception is, or may become, significant within the plan area.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The draft plan manages both surface water and groundwater. The plan also has conjunctive management arrangements between the aquifers. Aquifer recharge is protected through limiting surface water extractions to five per cent of mean annual flows. It is unclear how these arrangements will be implemented.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	There are no identified environmental assets in the Amadeus Basin, from which drinking water is sourced. The draft plan aims to protect environmental assets within other water resources by setting precautionary extraction limits in the absence of detailed information on water requirements.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A technical review was completed to inform the five-yearly review of the 2006 plan and reported against some monitoring targets. The draft plan contains a monitoring strategy, although the reporting schedule is not clear. There is an implementation action to develop environmental monitoring arrangements.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The draft plan states the impact of climate change in the area is expected to be minimal during the plan's life. Variability has been accounted for to the extent to which it is reflected in historical data. There are no mechanisms in the plan to manage future variability, which may be suitable for the Amadeus Basin but the plan's other groundwater resources may benefit from more detailed arrangements.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement on the draft plan has occurred through a water advisory committee and the release of the draft plan for public comment.
12. Have identified outcomes been achieved during the reporting period?	To some extent	An evaluation of the 2006 plan was undertaken, although it has not been publicly released to date. Information provided for this assessment suggests some progress towards implementing the 2006 plan, although there is limited evidence of the achievement of plan outcomes.

GREAT ARTESIAN BASIN (NT) WATER ALLOCATION PLAN 2013–2023



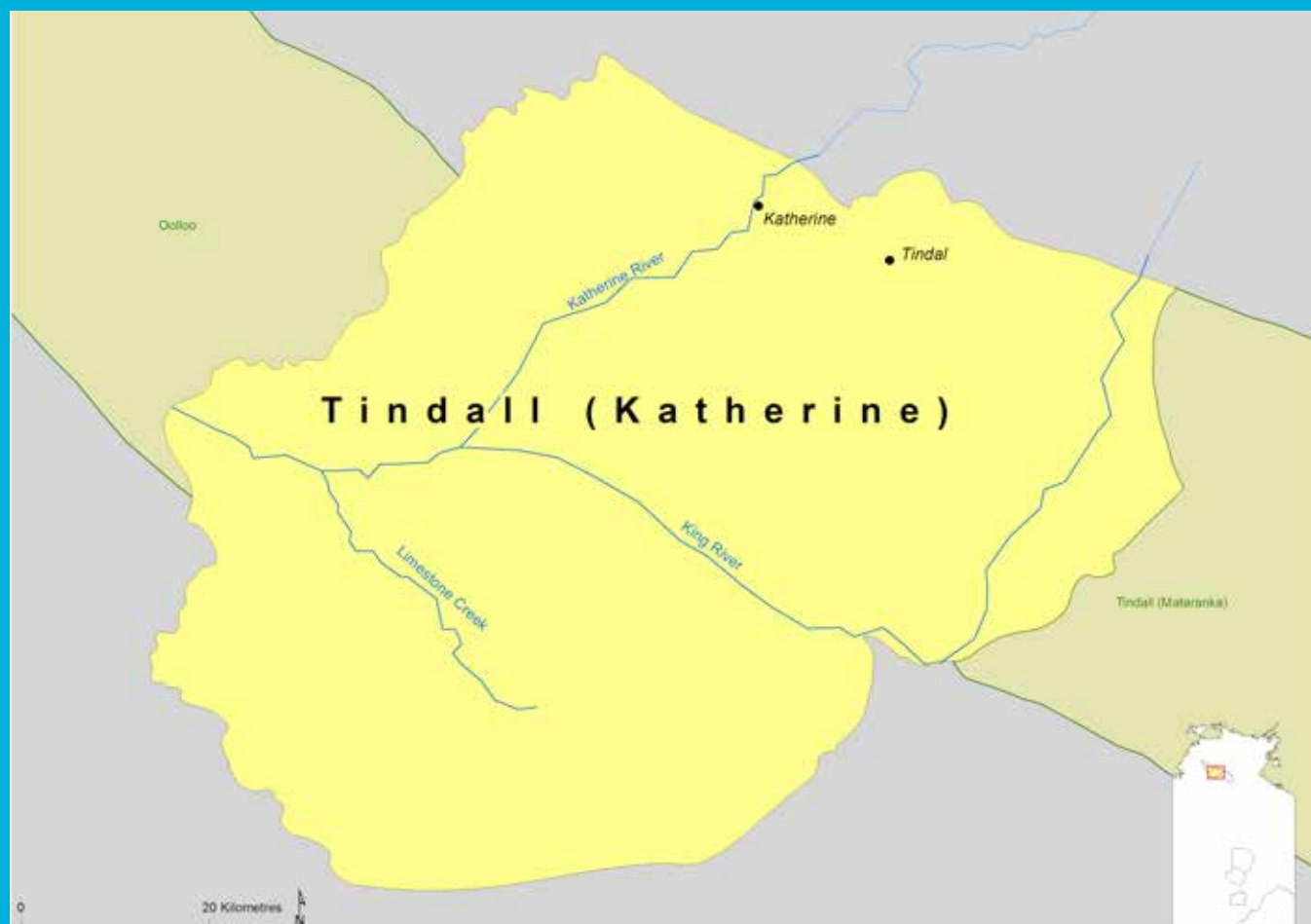
Context

The draft Great Artesian Basin WAP covers the Great Artesian Basin water control district, located in the arid zone in the south-east of the NT. The plan covers surface water and groundwater resources, including the NT portion of the Great Artesian Basin (GAB). Rainfall and streamflow are highly episodic and, as a result, no significant surface water extraction occurs at present. Groundwater is extracted for stock and domestic use and public water supply. Future uses are likely to include mining and petroleum activities. The plan was developed to support the NT government to meet its obligations under the GAB strategic management plan – a cross-jurisdictional plan with the key objective of encouraging the sustainable management and use of the GAB's water resources.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	To some extent	A draft plan was released for public consultation in March 2013. The plan has not yet been finalised.
2. Does the plan include key assessments?	To some extent	Several assessments were undertaken to inform the plan's development. The plan acknowledges the absence of comprehensive scientific information and the difficulties with estimating current and future water demand for mining and petroleum activities. Under these circumstances the plan adopts a precautionary approach.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The draft plan does not identify any overuse or overallocation. A precautionary approach has been adopted whereby groundwater extraction is limited to a volume equivalent to 70 per cent of average annual recharge and surface water extraction to five per cent of any flow at any time.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The draft plan includes clear objectives that are linked to strategies, performance indicators and actions (including monitoring), however the objectives are very broad and not all performance indicators are measurable.
5. Does the plan facilitate trade?	To some extent	The draft plan allows for trade although licences are not fully NWI-consistent and barriers are not explained. There is a low level of demand for trading in the area.
6. Is interception appropriately considered and integrated into the plan?	To some extent	Unlicensed stock and domestic use is estimated and accounted for within extraction limits. Water for mining and petroleum is authorised outside of the WA 1992. There is a trigger to review the plan if a large mine is approved.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The draft plan manages both surface and groundwater. Aquifer recharge is protected by limiting surface water extraction to five per cent of any flow. The unconfined, confined and artesian portions of the GAB are managed as one resource within a single extraction limit.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The draft plan aims to protect environmental assets within the plan area, and connected to the plan area, by setting conservative extraction limits for surface water and groundwater resources in the absence of detailed information on water requirements.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	Not applicable	The draft plan includes a broad monitoring program, but there is no commitment to public reporting of monitoring. Compliance and enforcement provisions are provided in the WA 1992 and additional requirements are set out in the plan.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The draft plan states that the impacts of climate change will be reconsidered at the five-year review. Variability has been accounted for to the extent that it is reflected in historical data. There are no mechanisms in the plan to manage future variability, which may be suitable under the current demand scenario but more detailed arrangements could be required as use increases.
11. Is stakeholder engagement in the planning process adequate?	Yes	No water advisory committee was established for this plan due to the limited number of stakeholders and their geographic spread. Consultation to date has been through meetings with key interest groups (including Indigenous representatives) and the release of the draft plan for comment.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	As this is a draft plan it is too early to comment on reporting or the achievements of actions, outputs or outcomes.

TINDALL LIMESTONE AQUIFER, KATHERINE WATER ALLOCATION PLAN 2009-2019



Context

The Tindall Limestone Aquifer in the Katherine region represents one of the NT's highest yielding, good quality groundwater resources. The Tindall Aquifer supplies the Katherine township and Tindal RAAF base with water for drinking and maintenance of public open space, along with domestic and garden supplies for rural residents. The aquifer also supports agricultural and industrial activities, including beef cattle, crops and horticulture.

An important feature of the Tindall Aquifer is that it discharges into the Katherine River through upwelling directly into the river and through springs. Through the provision of these baseflows, the Katherine River continues to flow during the dry season.

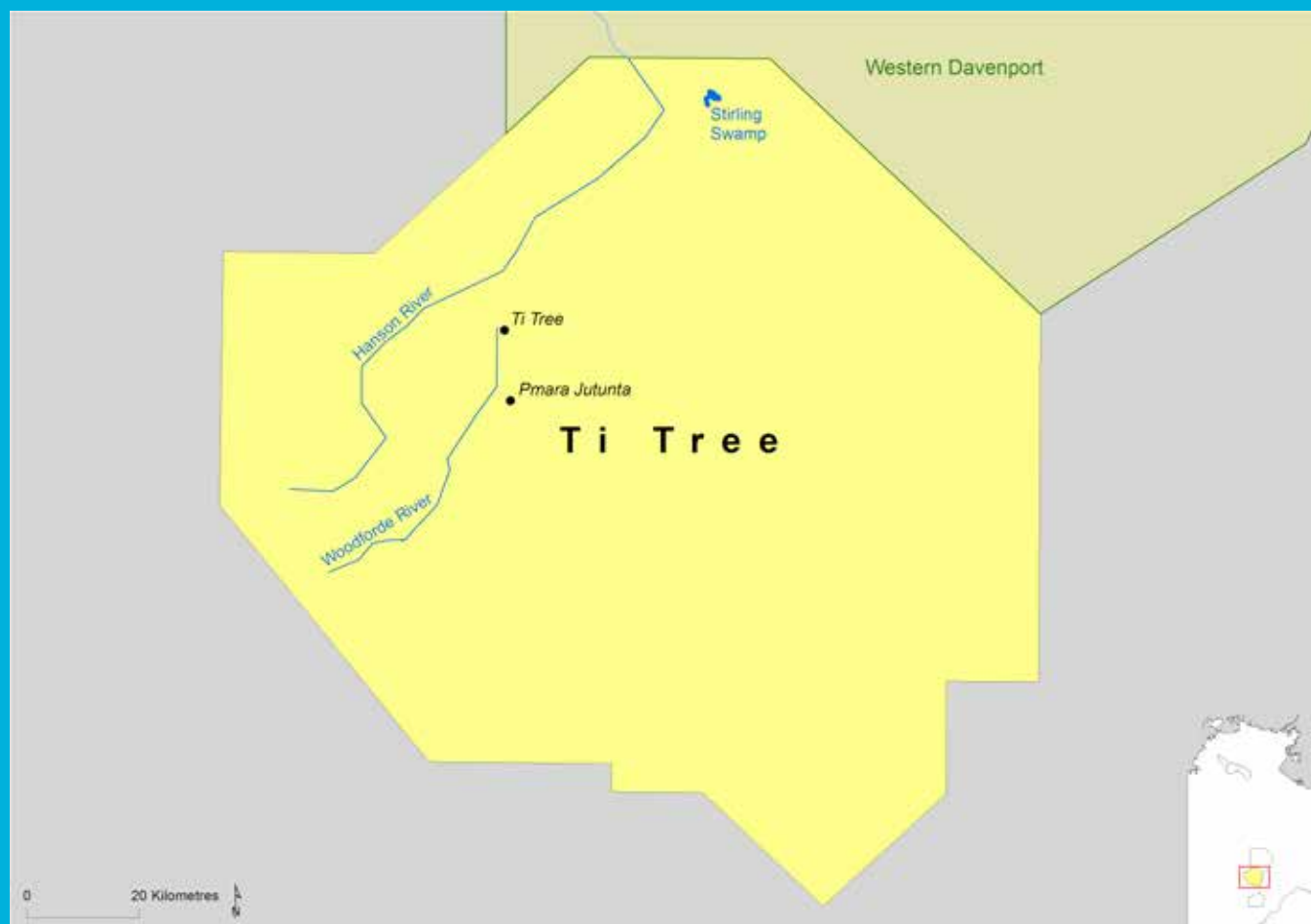
Increasing consumptive demand for groundwater in the area has increased the potential for the environmental values of the highly connected Katherine River to be adversely affected and driven the need for a WAP to manage use of the groundwater and maintain the important perennial nature of the river.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A WAP was finalised in 2009 with a review due by 2014.
2. Does the plan include key assessments?	Yes	The plan contains transparent pre-planning assessments, but there is no explicit discussion of risks.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	Yes	The plan does not identify any areas of overuse. The plan establishes extraction limits using a clear trade-off process and has strategies to manage use within these limits.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The plan includes clearly identified and measurable outcomes, and monitoring arrangements are clearly linked to the plan's outcomes.
5. Does the plan facilitate trade?	To some extent	The plan allows trading and barriers to trade are explained by the plan, although licences are not fully NWI-consistent. There is a low level of demand for trading in the area.
6. Is interception appropriately considered and integrated into the plan?	Yes	The plan accounts for extraction for stock and domestic uses. The plan does not identify any other forms of interception within the catchment.
7. Does the plan include/address GW/ SW connectivity as appropriate?	To some extent	The plan recognises the connectivity between groundwater and surface water. It manages groundwater extractions to protect Tindall Aquifer discharge into the Katherine River, but it does not include management of surface water extractions.
8. Does the plan contain accountable environmental watering arrangements?	Yes	The plan has accountable environmental watering arrangements with appropriate management arrangements that aim to protect identified assets.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	A monitoring program is set out in the plan. There is evidence that some monitoring and reporting is occurring. This includes flow and water use monitoring, which inform annual allocation announcements and groundwater-level monitoring. Compliance and enforcement provisions are specified in legislation.
10. Does the plan deal appropriately with climate change and/or variability?	To some extent	The plan manages variability in climate through triggers and management responses, but the plan does not consider future climate change. The plan review will include an updated historical climate sequence and take account of available information on future changes to climate.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement occurred through the water advisory committee, community meetings and written submissions. There was a limited submission period on the draft plan. Indigenous community members and representatives were involved in this process and feedback was provided on final decisions.
12. Have identified outcomes been achieved during the reporting period?	To some extent	Plan outcomes are partially being met through annual allocation announcements and licensing within the extraction limit.

TI TREE REGION

WATER ALLOCATION PLAN 2009



Context

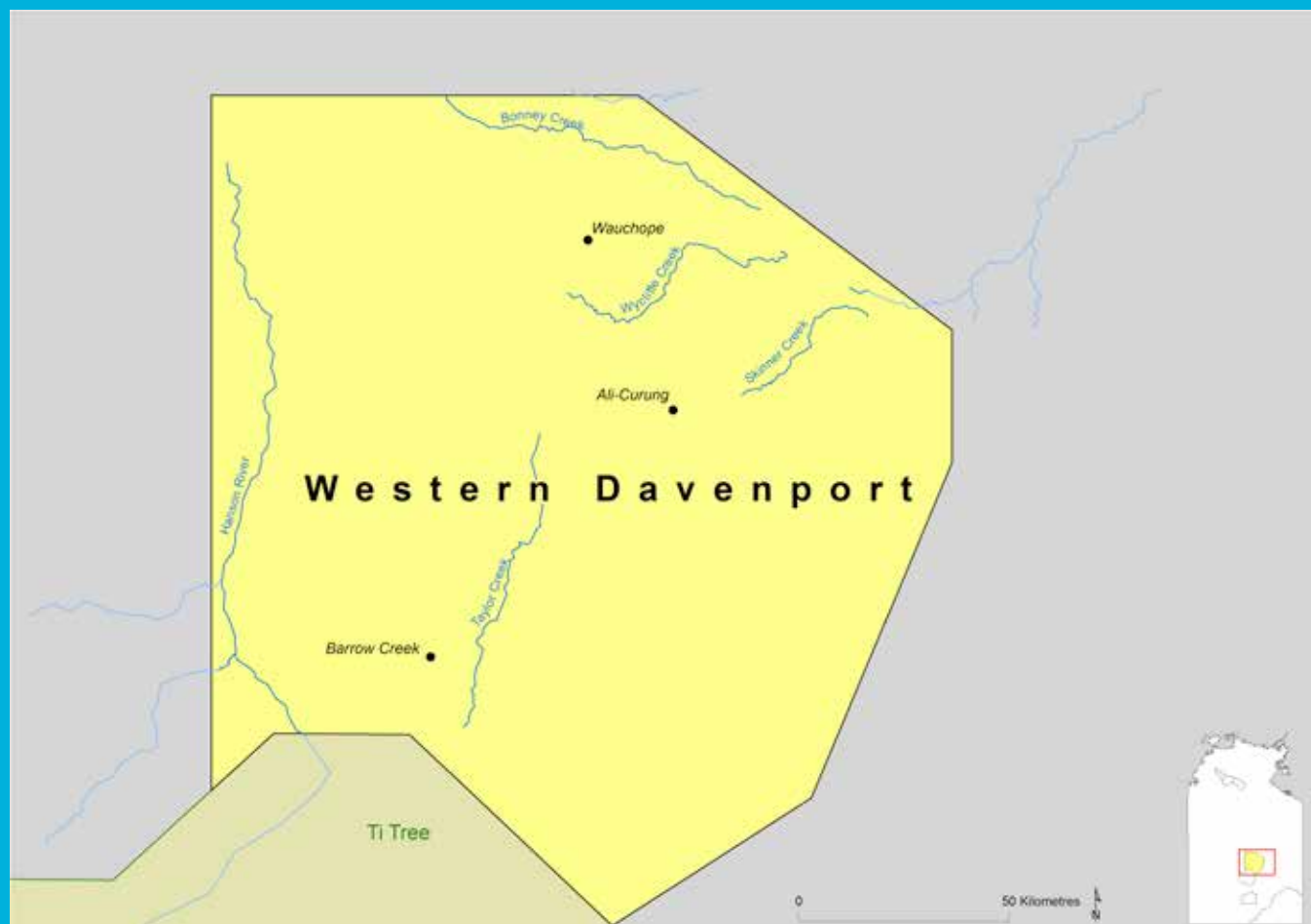
The Ti Tree WAP covers an area of about 14 000 square kilometres in the arid zone of central Australia. While predominantly focused on the Ti Tree Groundwater Basin Aquifer, the WAP also includes surface water catchments. Rainfall and streamflow are highly episodic. The aquifer is topped up during major rainfall events that usually occur every few years, with more significant recharges occurring every few decades. Most water-dependent ecosystems in the region rely on surface water or localised aquifers rather than the main Ti Tree Groundwater Basin Aquifer. The main uses of water are for public water supply, irrigated horticulture, industry and stock and domestic.

This region was the first area in the NT to undergo water planning. The need for management was identified to protect the environmental values of the area and their important cultural significance –within the context of this area being widely recognised as having potential for expanded development of the limited available water resources.

Findings

Report Card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A plan has been in place since 2002. The plan was revised in 2009 and was due to be reviewed and replaced in 2012. The plan has been extended and is now due to be reviewed and replaced by September 2014.
2. Does the plan include key assessments?	Yes	Key assessments were undertaken for the plan and plan revision. Consultation with stakeholders informed key assessments.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. It manages the extraction of groundwater within the WAPF whereby no more than 80 per cent of total aquifer storage will be extracted within 100 years. Monitoring suggests that the current allocation regime in the Ti Tree farms area can only be sustained for 20 to 30 years. This was not addressed in the 2009 plan revision.
4. Does the plan include clearly identified and measurable outcomes?	Yes	The original plan did not specify outcomes. The revised plan identifies measurable outcomes and includes a risk-based approach to the planning of monitoring. The plan identifies riparian vegetation and Stirling Swamp as GDEs to be protected.
5. Does the plan facilitate trade?	To some extent	The plan allows trading although licences are not fully NWI-consistent. The plan does not explain barriers to trade. There is a low level of demand for trading in the area.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The only interception activity the plan discusses is possible future mining activity. Water to support mining activity is provided through an authorisation outside the WA 1992, however a MOU between the relevant agencies states that new authorisations in an area covered by a WAP will not impinge on other allocations.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan manages both surface water and groundwater. Estimates of recharge have been determined through modelling calibrated against water-level monitoring data. Aquifer recharge is protected through limiting surface water extractions to five per cent of mean annual flows.
8. Does the plan contain accountable environmental watering arrangements?	Yes	Environmental watering arrangements have adopted a precautionary approach and are based on limiting the volume of groundwater extractions. Strict extraction limits have been included for the northern zone to protect the ephemeral Stirling Swamp.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan has an extensive monitoring and reporting schedule, although monitoring reports are now prepared only after five years of plan operation to inform plan review or replacement. The 2005–06 report does not address all outcomes included in the 2009 revision of the plan. The WA 1992 contains compliance provisions.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	The plan states the impact of climate change or variability in the area is expected to be minimal during the plan's life. As such, there are no mechanisms to manage climate variability in the plan.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement occurred through the water advisory committee, community meetings, written submissions and a stakeholder survey. Indigenous community members and representatives were involved in this process. The revised WAP was endorsed by the water advisory committee. It is not clear to what extent feedback was provided on final decisions taken.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	Identified outcomes were only included in the 2009 revision to the plan. No reporting has occurred since that time to indicate whether the stated objectives are being achieved. Assessment is expected to provide input to the replacement plan due in 2014.

WESTERN DAVENPORT WATER CONTROL DISTRICT WATER ALLOCATION PLAN 2011-2020



Context

The Western Davenport WAP covers an area of about 25 000 square kilometres in the arid zone of central Australia. While predominantly a groundwater plan, surface water resources are also included.

Rainfall is infrequent and surface water generally ephemeral in nature and, as a result, there are no significant extractions of surface water. Groundwater recharge rates are not known, although in general the aquifer is topped up during major rainfall events that usually occur every few years, with more significant recharges occurring every few decades.

The area hosts significant groundwater resources that are primarily used for public water supply and horticultural development, as well as for traditional uses by the community and pastoral concerns. The plan is important for managing the use of the limited water resources, as well as for protecting natural assets (which maintain Indigenous cultural and environmental values) over the long term.

Findings

Report card criteria	Assessment	Commentary
1. Is there a plan in place?	Yes	A plan has been in place since 2011 with a review due by 2016.
2. Does the plan include key assessments?	To some extent	Several assessments were undertaken to inform the plan, although these acknowledged an absence of scientific information. The plan adopts a precautionary approach in the absence of scientific information.
3. Does the plan prevent overuse, or if it acknowledges that the system is currently overused, is there a pathway to sustainable extraction?	To some extent	The plan does not identify any areas of overuse. It limits extractions to 80 per cent of the estimated recharge in the absence of more precise hydrological information. This is planned to be revisited at the five-year review stage.
4. Does the plan include clearly identified and measurable outcomes?	To some extent	The plan includes clearly identified and measurable outcomes, although monitoring activities could be more explicitly linked to these outcomes. It is not clear whether a risk assessment informed monitoring arrangements.
5. Does the plan facilitate trade?	To some extent	The plan allows trading although licences are not fully NWI-consistent. The plan does not explain barriers to trade. There is a low level of demand for trading in the area.
6. Is interception appropriately considered and integrated into the plan?	To some extent	The plan discusses interception activity with estimates made for stock and domestic. The plan also mentions exploratory mining activity, however the process for managing water for mining lacks transparency.
7. Does the plan include/address GW/ SW connectivity as appropriate?	Yes	The plan manages both surface water and groundwater. Estimates of recharge are used in the absence of more precise hydrological information. Aquifer recharge is protected through limiting surface water extractions to five per cent of mean annual flows.
8. Does the plan contain accountable environmental watering arrangements?	To some extent	The plan protects environmental assets through limiting use of surface water. It has been assumed that these assets are not groundwater dependent, although the plan acknowledges a lack of knowledge in this area.
9. Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?	To some extent	The plan includes a list of expected actions including monitoring. It also includes a list of additional monitoring activities to be undertaken if resourcing permits. There is no commitment to publicly report the results of monitoring before the five-yearly review. The public reporting to date has been through the water register. Compliance and enforcement provisions are provided in the WA 1992.
10. Does the plan deal appropriately with climate change and/or variability?	Yes	Climate change and climate variability have been noted in the plan. No specific allowance has been made given the large groundwater reserves and the intention to revisit these issues at the five-year review stage.
11. Is stakeholder engagement in the planning process adequate?	Yes	Stakeholder engagement occurred through the water advisory committee, community meetings and written submissions. Indigenous community members and representatives were involved in this process but they expressed concern about a lack of quality engagement.
12. Have identified outcomes been achieved during the reporting period?	Not applicable	Monitoring against plan outcomes is not due to be publicly reported until the five-year review in 2016 and no other information is available to assess whether progress towards the achievement of plan objectives has occurred.

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Appendix 1

Summary of criterion scores

Figure 1: 2011 and 2013 comparison of criterion 1 results - status of water planning

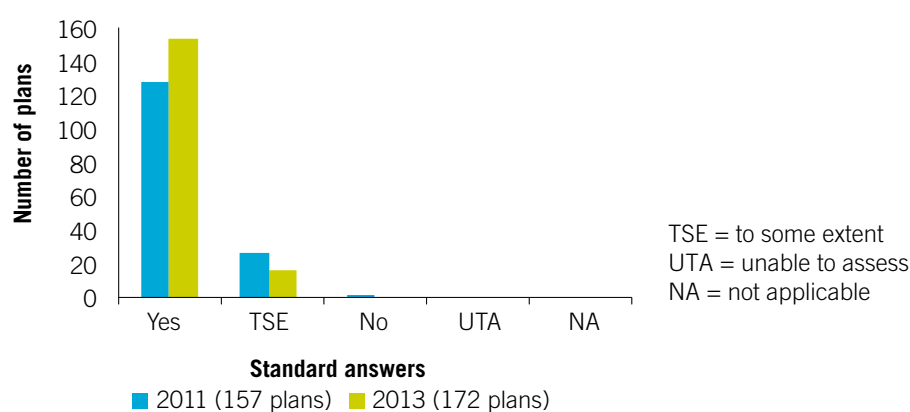


Figure 1 compares the 2011 and 2013 report card assessments for Criterion 1 – Status of water planning. These results show an increase in the number of water planning areas with substantive arrangements in place. There has also been a decrease in the proportion of plans assessed as ‘To some extent’. This trend reflects the finalisation of several draft plans over the last two years in New South Wales, Tasmania and South Australia.

Figure 2: 2011 and 2013 comparison of criterion 2 results – key assessments

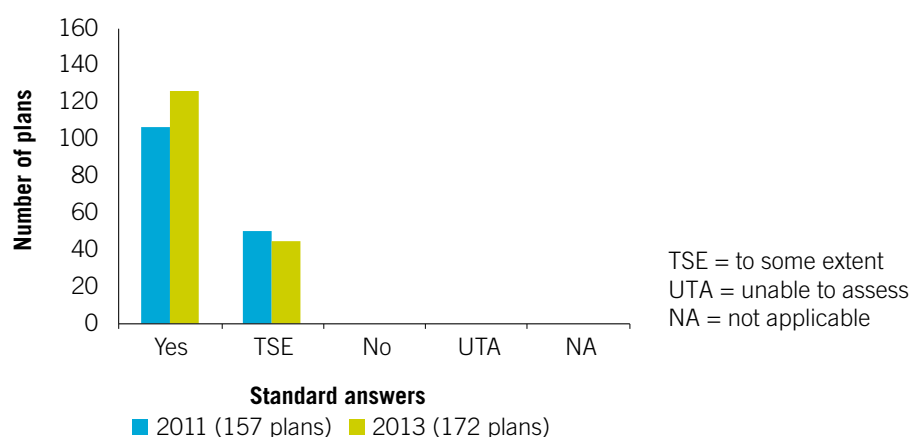


Figure 2 compares the 2011 and 2013 report card assessments for Criterion 2 – Key assessments. These results show that, in general, water planning arrangements continue to be supported by adequate assessments of the characteristics and values of water resources as part of the plan development process.

Figure 3: 2011 and 2013 comparison of criterion 3 results – overuse and pathways to sustainable extraction

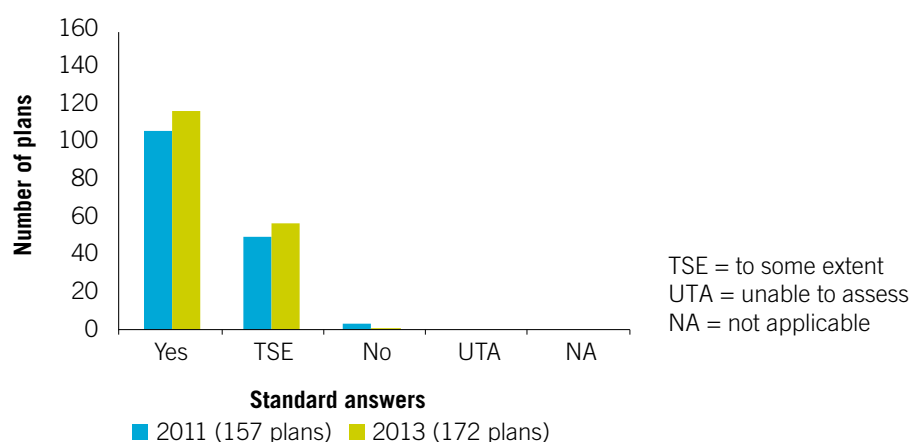


Figure 3 compares the 2011 and 2013 report card assessments for Criterion 3 – overuse and pathways to sustainable extraction. These results show that almost all planning areas examined had limits in place to manage extractions to agreed levels.

Figure 4: 2011 and 2013 comparison of criterion 4 results – measurable outcomes

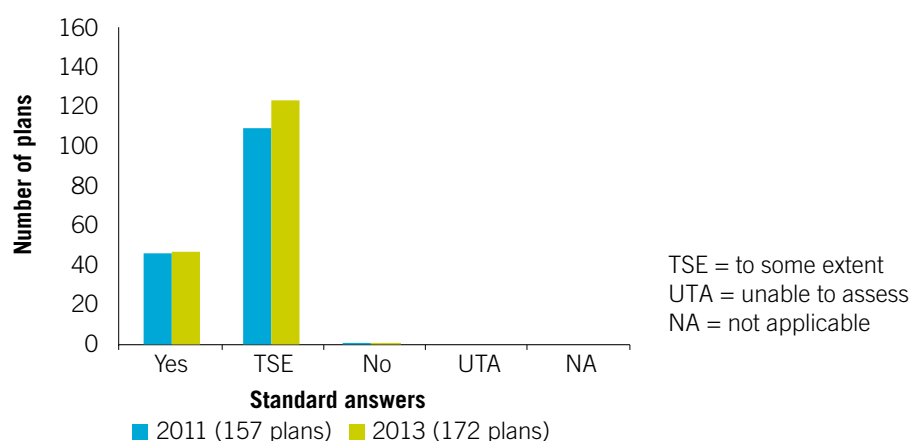


Figure 4 compares the 2011 and 2013 report card assessments for Criterion 4 – Clear and measureable outcomes. Although most planning areas that were assessed had arrangements of some sort in place, the results show that many were ranked only as 'To some extent'. This reflects the variable coverage and quality of outcomes articulated in plans, particularly in terms of measureable environmental, social and cultural values.

Figure 5: 2011 and 2013 comparison of criterion 5 results – facilitation of trade

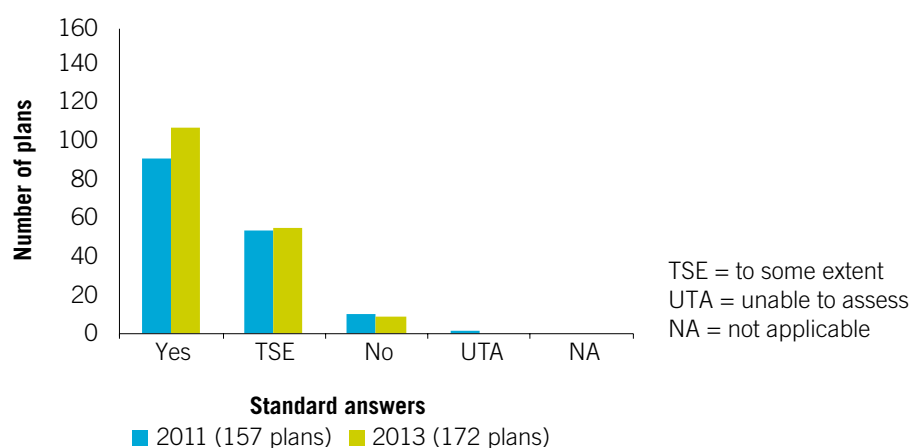


Figure 5 compares the 2011 and 2013 report card assessments for Criterion 5 – Trade. These results show that most planning areas examined had some arrangements in place to support trading of water entitlements. A large proportion of planning areas have been ranked as 'To some extent' or 'No' and this reflects jurisdictional arrangements that are not fully NWI-consistent or present barriers to trade.

Figure 6: 2011 and 2013 comparison of criterion 6 results – inclusion of interception activities

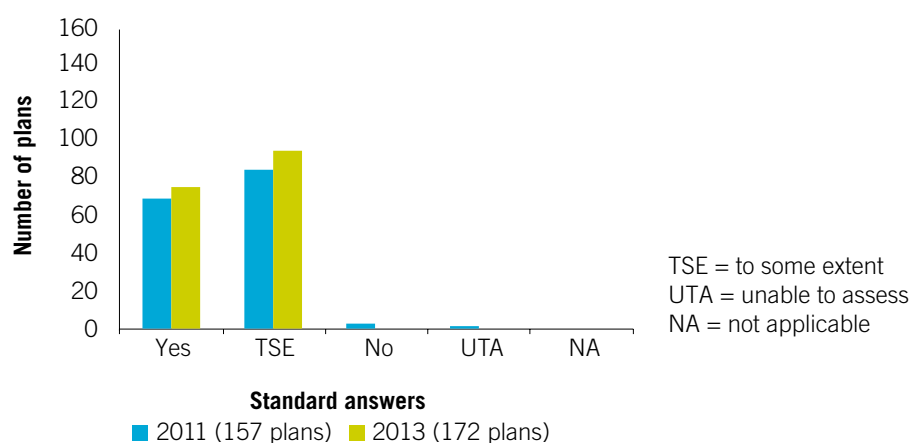


Figure 6 compares the 2011 and 2013 report card assessments for Criterion 6 – Interception. These results suggest that significant water use continues to occur outside the water planning process. Although several jurisdictions have introduced new policy and have reformed legislation to improve the monitoring and management of some intercepting activities, exceptions remain (e.g. extractive industries, stock and domestic use).

Figure 7: 2011 and 2013 comparison of criterion 7 results – surface-groundwater connectivity

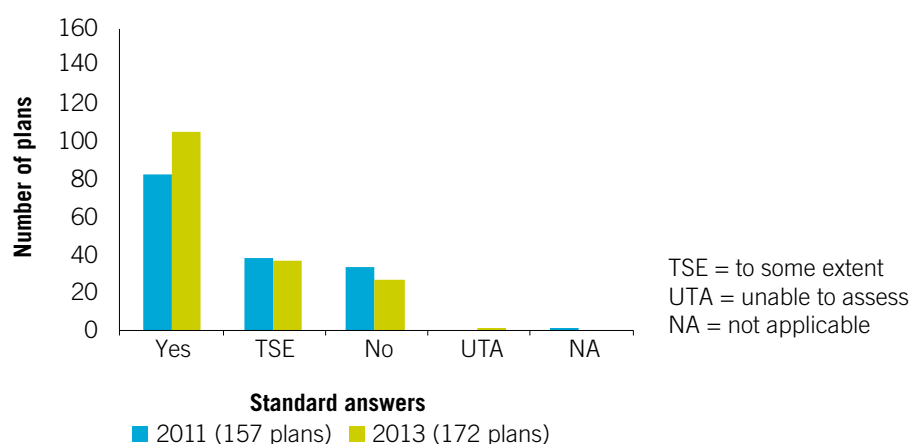


Figure 7 compares the 2011 and 2013 report card assessments for Criterion 7 – Connectivity. These results show that there has been an improvement in the integrated management of surface water and groundwater, with more planning areas covered by appropriate management of connectivity. However, for several planning areas information that identifies and quantifies connectivity is lacking.

Figure 8: 2011 and 2013 comparison of criterion 8 results – environmental water management

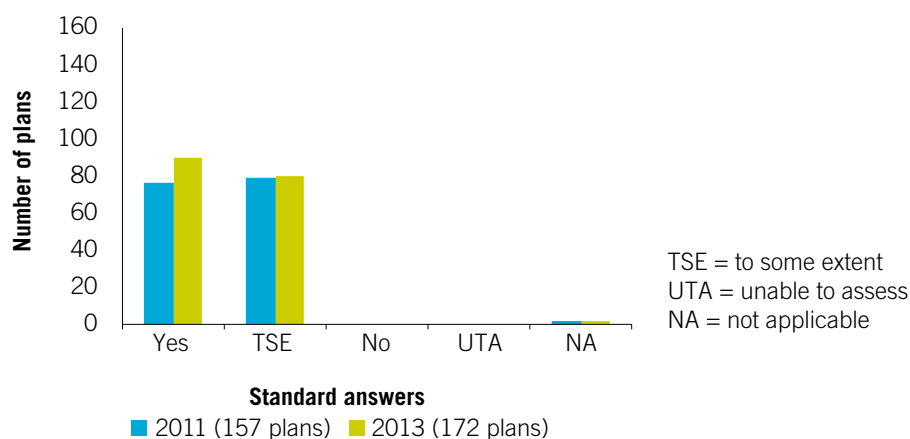


Figure 8 compares the 2011 and 2013 report card assessments for Criterion 8 – Environmental water management. These results show that there has been an increase in the number of planning areas covered by accountable environmental water management arrangements. While environmental provisions may be in place, the report card assessments continue to find inadequacies in the associated monitoring arrangements.

Figure 9: 2011 and 2013 comparison of criterion 9 results – monitoring, compliance and enforcement

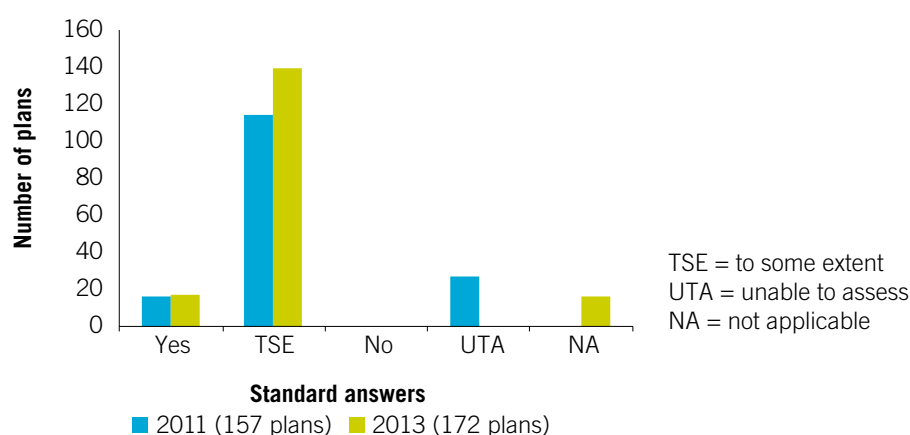


Figure 9 compares the 2011 and 2013 report card assessments for Criterion 9 – Monitoring, compliance and enforcement. While most planning areas are covered by jurisdiction-wide compliance and enforcement arrangements, there continues to be deficiencies in monitoring programs. In many cases, monitoring information is not comprehensive, is of poor quality or is unavailable. For plans that were in draft at the time of assessment or which have only recently commenced, this criterion was considered ‘Not applicable’.

Figure 10: 2011 and 2013 comparison of criterion 10 results – climate change and variability

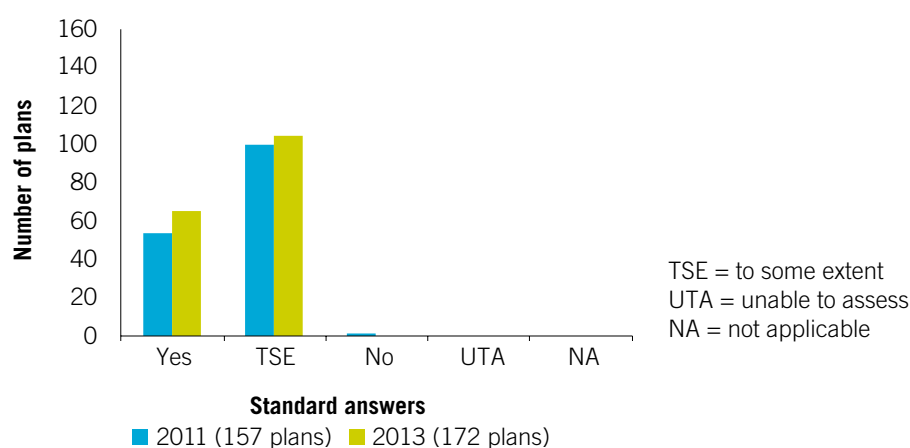


Figure 10 compares the 2011 and 2013 report card assessments for Criterion 10 – Climate change and variability. These results show that, in general, planning arrangements continue to include consideration of the potential impacts of variation in resource availability. Although in many planning areas this is limited to the historical climate record, there are an increasing number of plans that incorporate provisions for projected climate change scenarios.

Figure 11: 2011 and 2013 comparison of criterion 11 results – stakeholder engagement

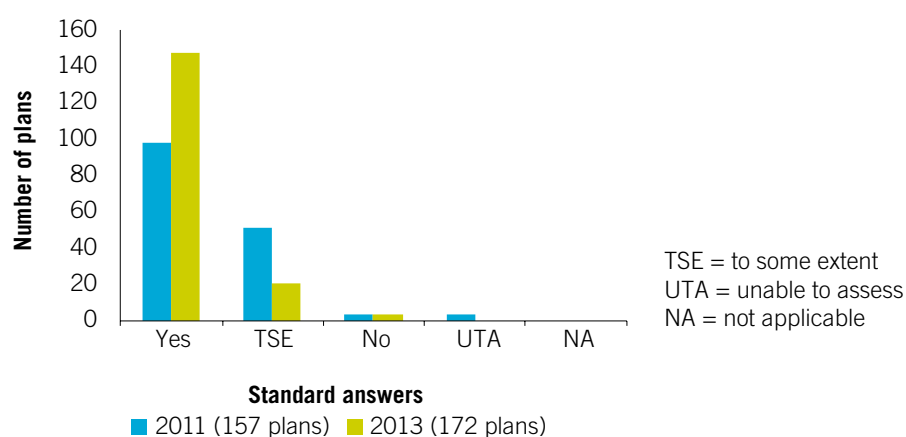


Figure 11 compares the 2011 and 2013 report card assessments for Criterion 11 – Stakeholder engagement. There has been an increase in the number of areas assessed as having adequate stakeholder engagement in the water planning process. The 2013 results have been strongly influenced by the review process undertaken for a large number of plans in New South Wales.

Figure 12: 2011 and 2013 comparison of criterion 12 results – achievement of outcomes

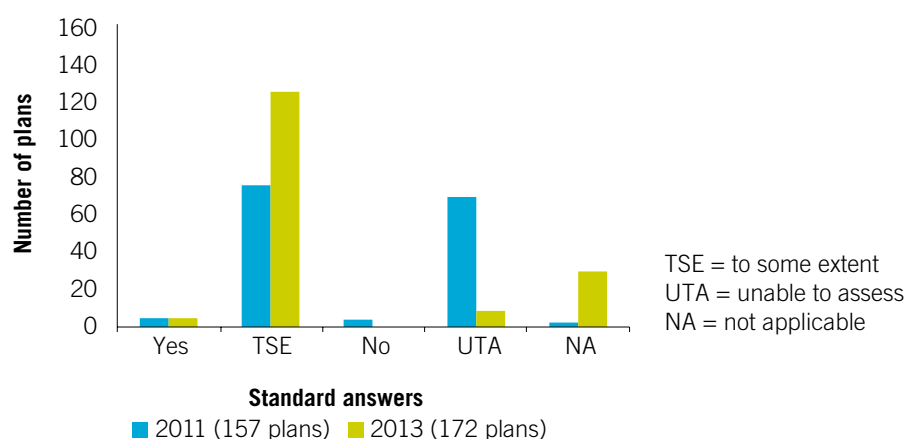


Figure 12 compares the 2011 and 2013 report card assessments for Criterion 12 – Achievement of outcomes. These results show that there continue to be deficiencies in the evaluation of water planning outcomes, which is closely related to the inadequacies highlighted by Criterion 9 (Monitoring) and Criterion 4 (Measurable outcomes). There are several planning areas for which reviews are overdue and this continues to hinder the evaluation of outcome achievement.

There has been a shift in the number of plans assessed as ‘Unable to assess’ which is related, in part, to an increase in the Commission’s capacity to access and analyse a greater pool of planning information. For plans that were in draft at the time of assessment or which have only recently commenced, this criterion was considered ‘Not applicable’.

Appendix 2

National Water Planning Report Card framework

The national water planning report card assessment criteria, sub-criteria and standard answers, developed in consultation with the jurisdictions, are presented below.

The *National Water Planning Report Card 2011* included 'Baseline' assessments (plans assessed against a limited set of sub-criteria) and 'Detailed' assessments (plans assessed against all sub-criteria). Detailed assessments were undertaken for all evaluations in 2013.

National Water Planning Report Card framework

1. Status of plan.

Is there a plan in place?

- | | |
|----|---|
| 1a | Is there a plan in place? |
| 1b | What is the status of water planning in this area? |
| 1c | Were criteria used to determine if or when a plan would be created? |

2. Key assessments.

Does the plan include key assessments?

- | | |
|----|--|
| 2a | Is there a hydrological assessment that describes and quantifies all water resources within the plan area? |
| 2b | Is there an assessment of the community values and attitudes to water in the plan area? |
| 2c | Is there an assessment of the economic value of water in the plan area? |
| 2d | Is there an assessment that identifies and quantifies the water needs of environmental assets? |
| 2e | Is there an assessment of the risks to the water resource? |
| 2f | Were key assessments informed by a consultation process? |

3. Overuse status and whether there is a pathway to return to a sustainable water extraction regime.

Does the plan identify overuse and is there a pathway to sustainable extraction?

- | | |
|----|---|
| 3a | Is the sustainable level of extraction specified by the plan? |
| 3b | Does the plan identify any indicators for approaching overuse? |
| 3c | If there is overuse, does the plan recognise overuse and provide a clearly defined pathway to correct it within a specific timeframe? |
| 3d | If there is overuse, have actions to address overuse been implemented to date? |

4. Inclusion of clearly identified and measurable outcomes.***Does the plan include clearly identified and measurable outcomes?***

4a	Does the plan identify measurable outcomes and outputs that can be assessed within the plan's timeframe?
4b	Are the provisions in the plan linked to the plan outcomes?
4c	Are the monitoring arrangements within the plan linked to the plan outcomes?
4d	Do monitoring arrangements address the identified risks?

5. Facilitation of trade (absence of barriers, meeting service standards for trade, etc.).***Does the plan facilitate trade?***

5a	Does the plan enable trade in line with the NWI?
5b	Are there any barriers to trade?
5c	If barriers exist, are they explained?

6. Integration of mining, forestry and other water intercepting activities within the water planning and entitlements system where appropriate.***Is interception appropriately considered and integrated into the plan?***

6a	Do assessments include major interception activities?
6b	Is the potential for interception recognised in the plan, including the identification of any risks to the water resources from changes to intercepting activities?
6c	Where interception is an identified risk to water resources, does the plan include rules to ensure that interception activities (including mining and coal seam gas) within the plan area do not compromise the plan outcomes?
6d	Does the plan require any metering or monitoring of intercepting activities?
6e	Does the plan include a threshold level for intercepting activities, beyond which water access entitlements are required?

7. Surface water/groundwater connectivity.***Does the plan include/address surface water and groundwater connectivity as appropriate?***

7a	Is GW/SW connectivity recognised in the plan?
7b	Does the plan include conjunctive management arrangements for connected GW and SW resources?
7c	If the plan deals with a single resource, is there reference to a plan or management arrangements for other water resources within the plan area?

8. Accountable environmental water management arrangements, together with a comprehensive environmental watering plan (or other appropriate environmental water management arrangement).***Does the plan contain accountable environmental water management arrangements?***

8a	Does the plan include environmental water management arrangements or a comprehensive environmental watering plan?
8b	Are the environmental water management arrangements or environmental watering plan explicitly linked to the plan outcomes?
8c	Does the plan describe the environmental objectives and outcomes proposed during the life of the plan?
8d	Does the plan clearly assign responsibilities (positions or agencies) for all environmental watering provisions?
8e	Was the selection of environmental strategies for the plan based on science?
8f	Does the plan include monitoring arrangements to assess if the environmental objectives are being achieved?
8g	Does the plan include triggers to amend or change the environmental water arrangements as a result of the outcomes of monitoring or research or new information?
8h	Does the plan reference other relevant environmental management plans?

9. The adequacy of monitoring, compliance and enforcement provisions.***Is there adequate monitoring occurring, and are there compliance and enforcement mechanisms in place?***

9a	Is there a monitoring framework for the plan?
9b	Are plan outcomes being monitored?
9c	Is the monitoring reporting schedule being followed?
9d	Is action being taken to collect additional information required to implement the plan?
9e	Is there a review process that allows for changes to the plan based on information arising from monitoring?
9f	Is monitoring addressing the identified risks?
9g	Are there arrangements for compliance and enforcement?

10. Planning for climate change and extremes in inflows or recharge that may occur during the planning cycle.***Does the plan deal appropriately with climate change and extremes in inflows or recharge?***

10a	Have climate change or climate variability and extreme scenarios been considered in the development of the plan?
10b	Is there an indication of the risks to the condition, or continued availability, of the water resources that arise from the effects of climate change or climate variability?
10c	Are there long-term strategies in the plan for dealing with the effects of climate change or climate variability?
10d	Does the plan include triggers, management responses and responsibilities in the plan for responding to unexpected changes in water availability?
10e	If the plan cannot be amended during its life to respond to unexpected changes in water availability, are there other transparent mechanisms for dealing with this?

11. Assessment of the adequacy of stakeholder engagement in planning processes.***Is stakeholder engagement in the planning process adequate?***

11a	Was there a strategy for stakeholder engagement that covered the entire planning process?
11b	Were all stakeholders relevant to this plan area identified?
11c	Was stakeholder input considered at all key points in the planning process?
11d	Was the stakeholder engagement tailored to maximise community input?
11e	Was stakeholder input considered in the development of the plan?
11f	Are decisions made available to the public?

12. The extent to which identified outcomes have been achieved during the reporting period.***Have identified outcomes been achieved during the reporting period?***

12a	Does the plan include clearly identified and measurable outcomes?
12b	What is the reporting period for the plan?
12c	Does the plan clearly assign responsibilities (individuals or agencies) for all implementation activities under the plan?
12d	Have plan outcomes been achieved to date (noting the reporting period for the plan)?
12e	Have any actions or outputs been achieved that demonstrate progress against plan outcomes?
12f	Do monitoring results support any stated progress in achieving actions or outputs that demonstrate progress against plan outcomes?
12g	Have identified risks been mitigated?
12h	Have monitoring results shown a need for change in the plan?
12i	If the need for change was identified, has the plan been adapted or changed?

A set of standard answers that apply to the national water planning report card framework were developed, as listed below.

Standard answer	Comment
1. Yes: the issue is covered adequately	The issue is addressed for this water plan area.
2. To some extent: the issue is only partially covered	The issue is not adequately addressed in terms of coverage or quality for this water plan area.
3. No: the issue is not included in the plan	Major deficiencies in coverage or detail were identified for this water plan area.
4. Unable to assess: insufficient supporting information is available	It is not possible with the information available to make a judgement against this criterion.
5. Not applicable*	Does not apply to this water plan.

** Not all criteria within the framework are relevant to all water plans, so not all criteria were assessed. For example, very recently released water plans would not be expected to have achieved all the stated outcomes at the time of the assessment.*